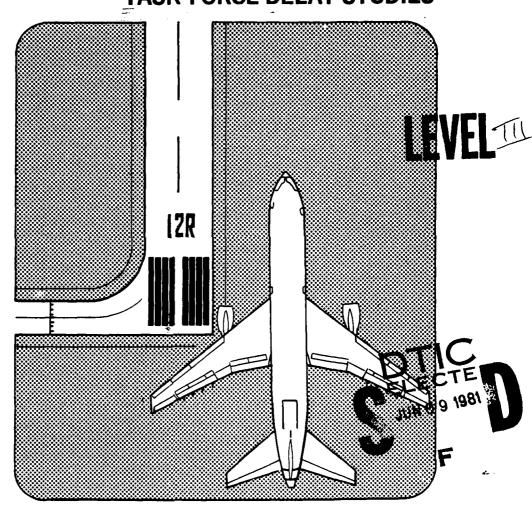
AD-A099 880 PEAT MARWICK MITCHELL AND CO SAN FRANCISCO CALIF F/G 1/2 LAMBERT-ST. LOUIS INTERNATIONAL AIRPORT DATA PACKAGE NUMBER 5. --ETC(U) JUN 80 UNCLASSIFIED 1072 A09#880

# LAMBERT-ST. LOUIS INTERNATIONAL PACKAGE NO. 5.

AIRPORT IMPROVEMENT TASK FORCE DELAY STUDIES .

AD A 099880



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DOT: FA77WA -3961



Peat, Marwick, Mitchell & Co.

81 6 08 115

# ATTACHMENT A INPUT DATA SUMMARY

# THREE BASELINE SCENARIOS AND INPUT CHANGES FOR ALL EXPERIMENTS -- AIRFIELD SIMULATION

Lambert-St. Louis International Airport

St. Louis
Airport Improvement Task Force Delay Studies

Prepared by

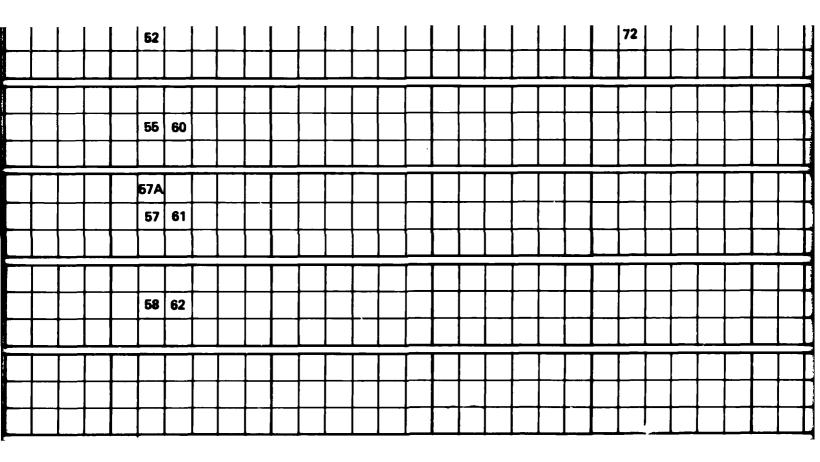
Peat, Marwick, Mitchell & Co. San Francisco, California

June 1980

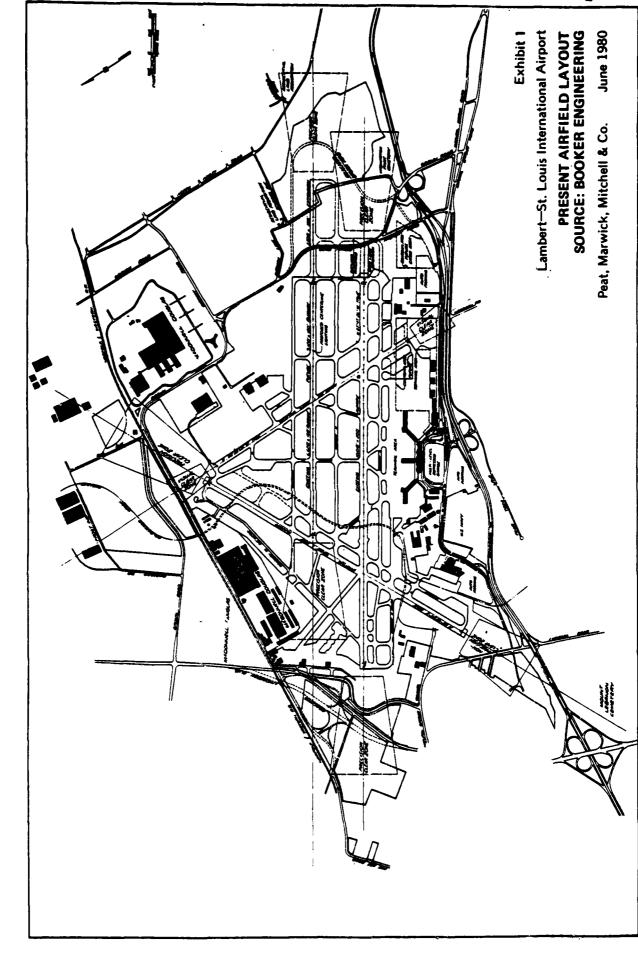
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- 1. BASELINE INCLUDES PHYSICAL IMPROVEMENTS IN PLACE IN 1979 AND ADDITIONAL GATES NECESSARY TO ACC
- 2. SENSITIVITY ANALYSIS WITH DIFFERENT NOISE ABATEMENT SCENARIOS.
- 3. SENSITIVITY ANALYSIS WITH DIFFERENT LEVELS OF GENERAL AVIATION REDUCTIONS.



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# Experiment 7A (Revised) -- Runways 30R, 30L, and 24 VFR Baseline 1979 Demand and Mix Present ATC Procedures

## A. Logistics

- 1. <u>Title</u>: Lambert-St. Louis International Airport Experiment 7A
- 2. Random Number Seeds: 2017, 3069, 4235, 5873, 6981, 7137, 8099, 9355, 0123, 1985
- 3. Start and Finish Times: 0700 to 2200
- 4. Print Options: Standard options including summary outputs
- 5. <u>Airline Names</u>: AA American AL USAir

BN - Braniff DL - Delta EA - Eastern FL - Frontier

NW - Northwest Orient

OZ - Ozark RC - Republic

TI - Texas International TW - Trans World Airlines

AT - Air Taxi AF - Air Freight ML - Military

GA - General Aviation SS - Supplemental

- 6. Processing Options: COMPUTE
- 7. Truncation Limits: + 2 standard deviations
- 8. <u>Time Switch</u>: Not applicable
- B. Airfield Physical Characteristics
  - 9. Airfield Network: See Exhibit 1
  - 10. Number of Runways: 3

11. Runway Identification: 30R, 30L, and 24

# 12. Departure Runway End Links:

30R - Taxiway R 30L - Taxiway R

# 13. Runway Crossing Links Clearance Times (seconds):

Crossing clearance times Arrival Departure Arrival Run-Crossing on runway on runway on final link В C В way 30R 17-35 30R В G 30R 30R J 30R В Midcoast 30L 30L E 17-35 30L 30L G A F I 

## 14. Exit Taxiway Locations:

Runway	<u>Exit</u>	Feet from threshold
30R	С	6,563
30R	В	4,745
30R	G	3,325
30R	17-35	3,225
30L	E	6,200
30L	B-left	4,800
30L	B-right	4,800
30L	G ¯	3,705
30L	J	2,735
30L	17-35	2,430
24	С	7,620
24	L	6,035
24	A	5,190
24	P	3,800

15. Holding Area-Link Number: 47

16.	Airline Gates:	American - Braniff - Delta - Eastern - Frontier - Northwest Orient - USAir - Ozark - Republic - TI - TWA - Air Taxi - Air Freight - Supplemental -	3 1 2 1,2 4 6 1 6 5 1,3 6
			-

17. General Aviation Basing Areas: 7, 8, 9, 10, 11, 12, 13, and 14

# C. ATC Procedures

# 18. Aircraft Separations:

Arrival-Arrival Separation-VFR (nautical miles)

	(	Trail	Airc	raft	Class
	,	<u>A</u>	В	<u>C</u>	D
7 3	A	2.7	2.9	3.0	3.1
Lead	В	2.7	2.9	3.0	3.1
Aircraft	С	3.5	3.7	3.0	3.1
Class	D	5.3	5.5	4.7	3.9

Departure-Departure Separations-VFR (seconds)

		Trail	Airc	raft	Class
		<u>A</u>	В	C	D
* 4	A	30	30	45	50
Lead	В	35	40	45	50
Aircraft	С	45	45	60	60
Class	D	120	120	120	90

Departure-Arrival Separation (nautical miles)

		Trail	Airc	raft	Class
		_ <u>A</u>	В	<u> </u>	D
Faa7	A	1.1	1.4	1.5	1.6
Lead	В	1.1	1.4	1.5	1.6
Aircraft	С	1.8	1.8	1.8	1.8
Class	D	1.8	1.8	1.8	1.8

Arrival-Arrival Separation Between Lead Aircraft on Runway 24 and Trail Aircraft on Runway 30L (nautical miles)

		Trail	Airc:	raft	Class
		<u>A</u>	В	С	D
Lead	A	0	0	0	0
	В	0	0	0	0
Aircraft	С	0	0	0	3.1
Class	D	0	0	0	3.9

Arrival-Arrival Separation Between Lead Aircraft on Runway 30L and Trail Aircraft on Runway 24 (nautical miles)

		Trail	Airc	raft	Class
		A	В	<u>C</u>	D
7 4	A	0	0	0	0
Lead	В	0	0	0	0
Aircraft	C	0	0	0	0
Class	D	0	0	4.7	3.9

Arrival-Departure Separation Between Lead Aircraft on Runway 24 and Trail Aircraft on Runway 30R (seconds)

		Trail	Airc	raft	Class
		A	В	<u>c</u>	D
P 3	A	0	0	0	0
Lead	В	37	37	37	37
Aircraft	C	24	24	24	24
Class	D	20	20	20	20

Arrival-Departure Separation Between Lead Aircraft on Runway 24 and Trail Aircraft on Runway 30L (seconds)

		Trail	Airc	raft	Class
		A	В	<u>C</u>	D
* 3	A	0	0	0	0
Lead	В	0	0	0	0
Aircraft	С	45	45	45	45
Class	D	45	45	45	45

Departure-Arrival Separation Between Lead Aircraft on Runway 30R and Trail Aircraft on Runway 24 (nautical miles)

		Trail	Airc	Class	
		_ <u>A</u>	В	С	D
7	A	0	0	0	0
Lead	В	1.6	2.0	2.2	2.3
Aircraft	С	1.6	2.0	2.2	2.3
Class	מ	1.6	2.0	2.2	2.3

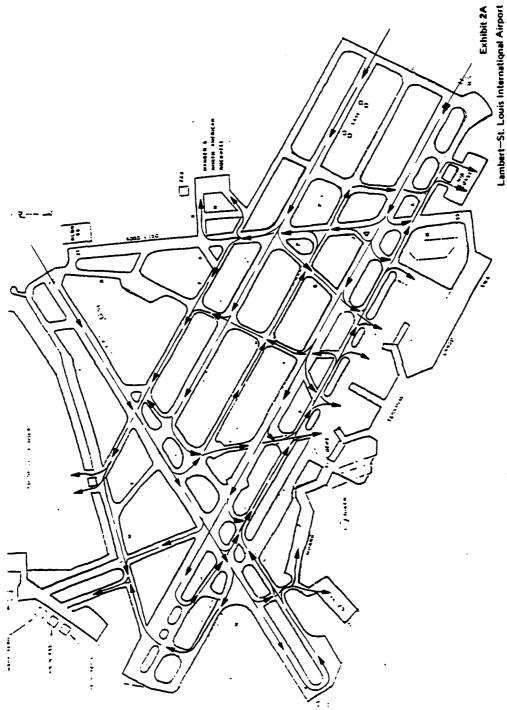
Departure-Arrival Separation Between Lead Aircraft on Runway 30L and Trail Aircraft on Runway 24 (nautical miles)

		Trail	Ai	rcraft	Class
		A	<u>B</u>	<u></u>	D
* 4	A	0	0	2.2	2.3
Lead Aircraft Class	В	0	0	2.2	2.3
	С	0	0	2.2	2.3
	D	0	0	2.2	2.3

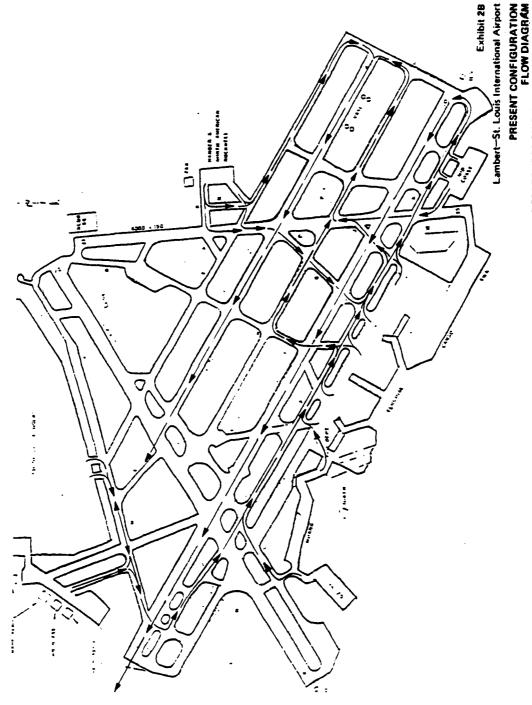
- 19. Route Data: See Exhibits 2a and 2b.
- 20. Two-Way Path Data: See Exhibits 2a and 2b.
- 21. Common Approach Paths:

	Aircraft class	Length (nautical miles)
VFR	A B C	2.0 2.0 6.0

- 22. <u>Vectoring Delays</u>: Report Sum of speed control, vectoring, and holding delay as one total.
- 23. Departure Runway Queue Control: Not used.
- 24. Gate Hold Control: When Runway 30R queue exceeds 6, when 30L exceeds 10.
- 25. Departure Airspace Constraints: Specified in separations and no aircraft held at gate due to airspace constraints.
- 26. Runway Interarrival Gap: Arrival separations increase from those specified in #18 to 8 miles when departure queue exceeds 6 on Runway 30L and 4 on Runway 30R.
- 27. Runway Crossing Delay Control: Arrival separations increase from those in #18 to 5 miles when crossing queue exceeds 4 on Runway 30L and 2 on Runway 30R.



PRESENT CONFIGURATION
FLOW DIAGRAM
ARRIVALS ON RUNWAYS 30R AND 30L AND 24
Paat, Marwick, Mitchell & Co. June 1980



PRESENT CONFIGURATION
FLOW DIAGRAM
DEPARTURES ON RUNWAYS 30R AND 30 L
Peat, Marwick, Mitchell & Co. June 1980

# 28. Exit Taxiway Utilization (percent):

Runway	Class	В	G	Exit C_	17-35			
30R	A B C D	28 34 4	36 2	64 96	100 36			
		<u>c</u>	<u>L</u>	<u>A</u> _	P			
24	A B C D	8 28	40 58		00 82 2			
		<u>A</u>	E	B- <u>left</u>	B- right	<u>G</u>	<u>J</u>	17-35
30L	A B C D	16 17	44 78	7 28 5	12	1 73	4 14	95 6

# 29. Arrival Runway Occupancy Times (seconds):

Runway	Class	B	G	Exit C	17-35	Weig aver	hted age		
30R	A B C D	52 45 45	40 45	58 58	46 38	4 5	6 3 3 7		
		<u>A</u>	E	B- left	B- right	G	<u>J</u>	<u>17-35</u>	Weighted average
30L	A B C D	61 72	52 57	54 40 41	41	52 43	41 34	38 32	38 42 49 59
		<u>c</u>	<u>L</u>	<u>A</u>		ighte erage			
24	A B C D	70 70	56 56		48 41 33	48 44 53 59			

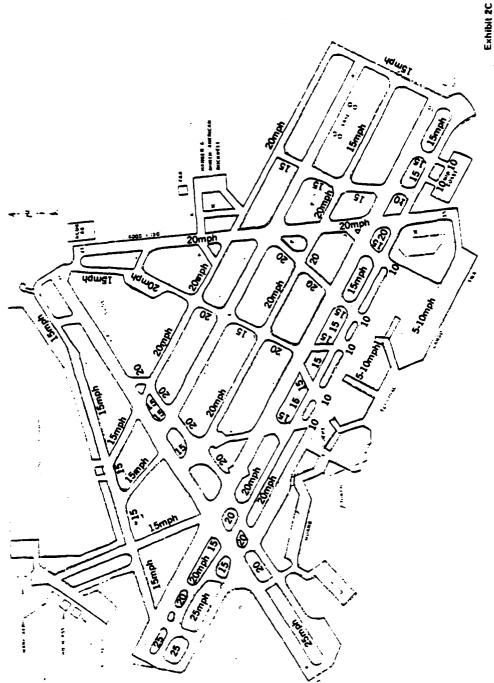
- 30. Touch and Go Occupancy Times: No touch and go's.
- 31. Departure Runway Occupancy Times (seconds):

Aircraft class	Mean	Standard deviation
A	34	4
В	34	4
С	39	4
ם	39	4

- 32. Taxi Speeds (mph): 5, 10, 15, 20, 25, and 35 (Exhibit 2c).
- 33. Approach Speeds (knots):

Aircraft class	Mean	Standard deviation		
A	95	10		
В	120	10		
C	130	10		
D	140	10		

- 34. Gate Service Times: To be supplied by airport task force.
- 35. Airspace Travel Times: Table 1.
- 36. Runway Crossing Times: 20 seconds.
- 37. <u>Lateness Distribution</u>: To be supplied by airport task force.
- 38. Schedule: 1979 Demand and Mix (Table 15).



Lambert—St. Louis International Airport
GENERALIZED TAXIWAY SPEEDS FOR
ARRIVALS ON RUNWAYS 30R, 30L AND 24, AND
DEPARTURES ON WILLINGAYS 30R AND 30L
Paat, Marwick, Mitchell'& Co. June 1980

Table 1

ARRIVAL FIX TRAVEL TIME--EXPERIMENT 7A
Lambert-St. Louis International Airport
Airport Improvement Task Force Delay Studies

Runway	Fix		Travel time
_name_	code	Class	(minutes)
		<u> </u>	(22.000)
24	K	1	10.5
24	K	2	10.5
24	K	3	12.5
24	K	4	13.0
24	В	1	
24	В	2	14.5
24	В	3	14.5
24	В	4	
24	F	1	12.5
24	F	2	12.5
24	F	3	16.5
24	F	4	
24	V	1	
24	V	2	13.0
24	V	3	16.5
24	<b>V</b> .	4	
30R	ĸ	1	
30R	K	2	11.0
30R	K	3	14.5
30R	K	4	15.0
30R	В	1	
30R	В	2	12.0
30R	В	3	14.0
30R	В	4	
30R	F	1	
30R	F	2	13.0
30R	F	3	17.0
30R	F	4	
30R	V	1	11.0
30R	V	2	
30R	V	3	13.0
30R	V	4	
30L	K	1	11.0
30L	K	2	11.0
30L	K	3	11.0
30L	K	4	
30L	В	1	9.5
30L	В	2	10.5
30L	В	3	12.5
30L	В	4	
30L	F	1	13.0
30L	F	2	13.0
30L	F	3	14.5
30L	F	4	15.5
30L	V	1	13.0
30L	٧	2	13.5
30L	V	3	17.0
<b>30L</b>	V	4	

Experiment 8--Runways 6, 12R, and 12L

VFR Baseline

1979 Demand and Mix

Present ATC Procedures

### A. Logistics

- 1. <u>Title</u>: Lambert-St. Louis International Airport Experiment 8
- 2. Random Number Seeds: 2017, 3069, 4235, 5873, 6981, 7137, 8099, 9355, 0123, 1985
- 3. Start and Finish Times: 0700 to 2200
- 4. <u>Print Options</u>: Standard options including summary outputs
- 5. <u>Airline Names</u>: AA American

AL - USAir

BN - Braniff

DL - Delta

EA - Eastern

FL - Frontier

NW - Northwest Orient

OZ - Ozark

RC - Republic

TI - Texas International

TW - Trans World Airlines

AT - Air Taxi

AF - Air Freight

ML - Military

GA - General Aviation

SS - Supplemental

- 6. Processing Options: COMPUTE
- 7. Truncation Limits: + 2 standard deviations
- 8. Time Switch: Not applicable

#### Airfield Physical Characteristics В.

- Airfield Network: See Exhibit 1.
- Number of Runways: 3 10.
- 11. Runway Identification: 12R, 12L, and 6
- Departure Runway End Links: 12R Taxiway A 12.

  - 12L Taxiway C 6 Taxiway C

# 13. Runway Crossing Links Clearance Times (seconds):

		Crossing clearance times											
			Arri	val		D	epar	ture			Arri		
Run-	Crossing	0	n ru	nway		0	n ru	nway			on f	inal	
way	<u>link</u>	D	C	В	A	D	C	В	A	D	<u>c</u>	B	A
12R	M	15	15	15	15	15	15	15	15	20	20	20	20
12R	R	60	57	60	50	47	47	42	42	20	20	20	20
12R	G	57	56	61	50	38	38	42	42	20	20	20	20
12R	E	34	38	44	50	27	27	29	32	20	20	20	20
12R	В	46	46	55	50	32	32	37	42	20	20	20	20
12R	Midcoast	60	57	60	50	43	43	42	42	20	20	20	20
12L	17-35	33	33	41	48	27	27	28	30	20	20	20	20
12L	В	20	20	27	33	18	18	18	19	20	20	20	20
12L	G	33	33	41	48	27	27	28	30	20	20	20	20
6	F	0	0	0	0	35	35	37	42	20	20	20	20
6	A	0	0	0	0	32	32	34	38	20	20	20	20
6	A-South	0	0	0	0	25	25	26	28	20	20	20	20
6	L	0	0	0	0	18	18	18	21	20	20	20	20

## 14. Exit Taxiway Locations:

Runway	Exit	Feet from threshold
12R	17-35	7,280
12R	J	6,975
12R	G	6,005
12R	В	4,910
12R	E	3,510
12L	R	6,630
12L	N	4,560
12L	G	3,465
12L	17-35	3,465
12L	В	1,945

15. Holding Area-Link Number: 47

16.	Airline Gates:	American -	3
		Braniff -	1
		Delta -	2
		Eastern -	1,2
		Frontier -	4
		Northwest Orient -	6
		USAir -	1
		Ozark -	6
		Republic -	5
		TI -	1
		TWA -	5
		Air Taxi -	1,3
		Air Freight -	6
		Supplemental -	6

17. General Aviation Basing Areas: 7, 8, 9, 10, 11, 12, 13, and 14

# C. ATC Procedures

# 18. Aircraft Separations:

Arrival-Arrival Separation-VFR (nautical miles)

		Trail	Frail Aircraft		
		A	В	С	D
F	A	2.7	2.9	3.0	3.1
Lead	В	2.7	2.9	3.0	3.1
Aircraft	C	3.5	3.7	3.0	3.1
Class	۵	5.3	5.5	4.7	3.9

Departure-Departure Separations-VFR (seconds)

		Trail	Airc	raft	Class
		A	В	С	D
<b>.</b> 9	A	30	30	45	50
Lead	В	35	40	45	50
Aircraft	С	45	45	60	60
Class	D	120	120	120	90

Departure-Arrival Separation (nautical miles)

		Trail Aircraft Class				
		A	В	C	D	
Lead	A	1.1	1.4	1.5	1.6	
read	В	1.1	1.4	1.5	1.6	
Aircraft						
Class	С	1.8	1.8	1.8	1.8	
CTGSS	D	1.8	1.8	1.8	1.8	

Departure-Departure Separation Between Lead Aircraft on Runway 6 and Trail Aircraft on Runway 12R (seconds)

		Trail	Airc	raft C	lass
		A	В	<u>c</u>	<u>D</u>
Lead	A	30	30	30	30
Lead I	В	26	26	26	26
Aircraft	С	25	25	25	25
Class	D	25	25	25	25

Departure-Departure Separation Between Lead Aircraft on Runway 12R and Trail Aircraft on Runway 6 (seconds)

		Trail	Aircr	aft Cla	ass_
		<u>A</u>	В	<u>c</u>	D
	A	22	22	22	22
Lead	В	20	20	20	20
Aircraft	С	20	20	20	20
Class	D	20	20	20	20

Arrival-Departure Separation Between Lead Aircraft on Runway 12R and Trail Aircraft on Runway 6 (seconds)

		Trail	Airc	raft	Class
		A	В	C	D
7	A	33	33	33	33
Lead	В	23	23	23	23
Aircraft	С	11	11	11	11
Class	D	10	10	10	10

Arrival-Departure Separation Between Lead Aircraft on Runway 12L and Trail Aircraft on Runway 6 (Seconds)

		Trail	Aircr	aft	Class
		A	В	C	D
	A	5	5	5	5
Lead	В	5	5	5	5
Aircraft	С	5	5	5	5
Class	D	120	120	5	5

Departure-Arrival Separation Between Lead Aircraft on Runway 6 and Trail Aircraft on Runway 12R (nautical miles)

		Trail	Airc	raft	Class
		A	<u>B</u>	C	D
• 1	A	8.0	1.0	1.1	1.2
Lead	В	0.7	0.9	0.9	1.0
Aircraft	С	0.7	0.9	0.9	1.0
Class	D	0.7	0.9	0.9	1.0

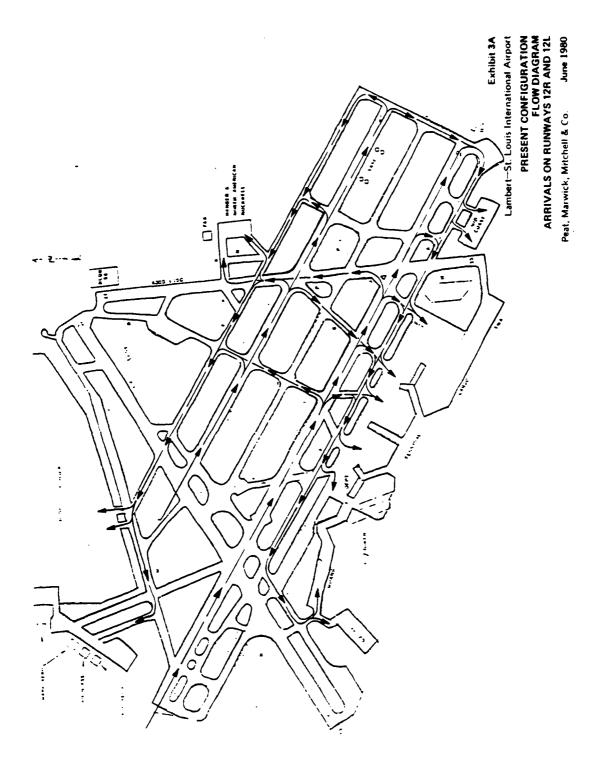
Departure-Arrival Separation Between Lead Aircraft on Runway 6 and Trail Aircraft on Runway 12L (nautical miles)

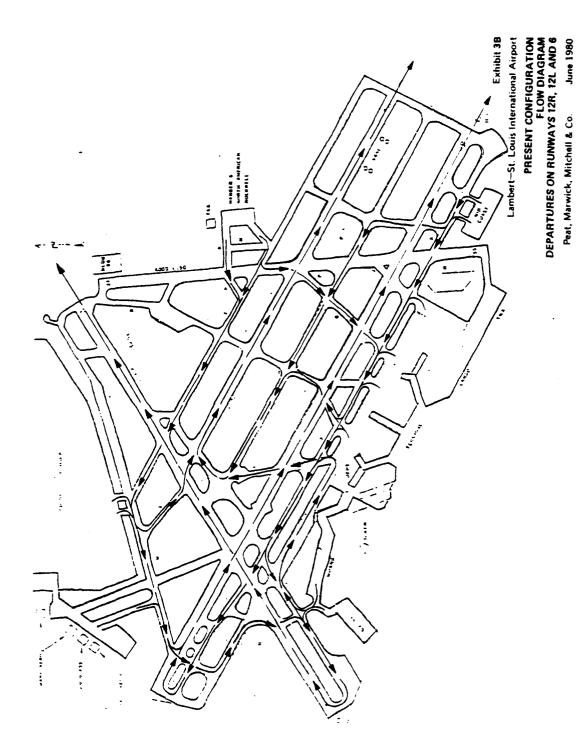
		Trail	Aircr	aft C	lass
		A	В	<u>C</u>	D
7 4 4 4	A	1.0	1.3	1.4	1.6
Lead	В	0.9	1.2	1.3	1.4
Aircraft	С	0.9	1.1	1.2	1.3
Class	D	0.9	1.1	1.2	1.3

- 19. Route Data: See Exhibits 3a and 3b.
- 20. Two-Way Path Data: See Exhibits 3a and 3b.
- 21. Common Approach Paths:

	Aircraft _class	Length (nautical miles)
VFR	A B	2.0
	C D	6.0 6.0

- 22. <u>Vectoring Delays</u>: Report sum of speed control, vectoring, and holding delay as one total.
- 23. Departure Runway Queue Control: Not used.
- 24. Gate Hold Control: When Runway 12L queue exceeds 6, when Runway 12R queue exceeds 10, and when Runway 6 queue exceeds 10.
- 25. Departure Airspace Constraints: Specified in separations and no aircraft held at gate due to airspace constraints.
- 26. Runway Interarrival Gap: Arrival separations increase from those specified in No. 18 to 8 miles when departure queue is greater than 6 on Runway 12R and 6, and greater than 4 on Runway 12L.





27. Runway Crossing Delay Control: Arrival separations increase from those in No. 18 to 5 miles when crossing queue is greater than 4 on Runways 6 and 12R, and greater than 2 on Runway 12L.

# 28. Exit Taxiway Utilization (percent):

Runway	Class			xit	_	
		17-3	<u>5</u> <u>J</u>	G	В	E
12R	A					100
	В	17	6	13	46	18
	C	14	17	39	28	2
	D	15	29	42	14	
		R	<u>N</u>	<u>G</u> _	<u>17-35</u>	<u>B</u> _
12L	A			8	9	83
	B C	65	16 33	40	42	2
	D	4	•	96	-	

# 29. Arrival Runway Occupancy Times (seconds):

Runway	Class		Exit					
		<u>17-</u>	-35	<u>J</u> _	<u>G</u>	<u>B</u> _	E	Weighted average
12R	A B C D		60 57 61	60 56 54	53 50 47	50 41 40	50 44 38	50 52 50 56
		R	И	G	<u>17</u>	<u>-35</u>	<u>B</u>	Weighted average
12L	A B C D	62 62	52 43	48 42		48 42 34	34 27	36 43 55 62

30. Touch and Go Occupancy Times: No touch and go's.

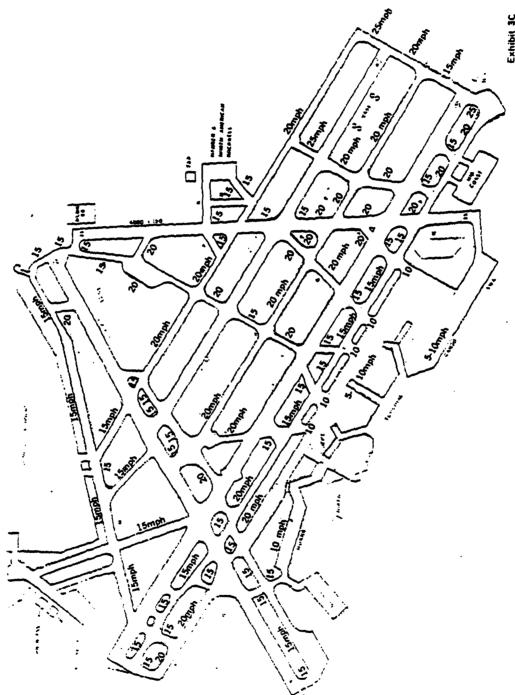
31. Departure Runway Occupancy Times (seconds):

Aircraft class	Mean	Standard deviation
A	34	4
В	34	4
С	39	4
D	39	4

- 32. Taxi Speeds (mph): 5, 10, 15, 20, 25, and 35 (see Exhibit 3c).
- 33. Approach Speeds (knots):

Aircraft class	Mean	Standard deviation		
A	95	10		
В	120	10		
С	130	10		
D	140	10		

- 34. Gate Service Times: To be supplied by airport task force
- 35. Airspace Travel Times: See Table 2.
- 36. Runway Crossing Times: 20 seconds
- 37. <u>Lateness Distribution</u>: To be supplied by airport task force
- 38. Schedule: 1979 Demand and Mix (Table 15).



Lambert - St. Louis International Airport

# GENERALIZED TAXIWAY SPEEDS FOR ARRIVALS ON RUMWAYS 12R AND 12L AND DEPARTURES ON RUMWAYS 12R, 12L AND 6

Peat, Marwick, Mitchell & Co. June 1980

Table 2

ARRIVAL FIX TRAVEL TIME--EXPERIMENT 8
Lambert-St. Louis International Airport
Airport Improvement Task Force Delay Studies

Runway name	Fix code	Class	Travel time (minutes)
12R 12R 12R 12R	K K K	1 2 3 4	13.0 13.0 15.0
12R 12R 12R 12R	B B B	1 2 3 4	13.0 13.5 16.5 17.0
12R 12R 12R 12R	F F F	1 2 3 4	11.0 11.0 11.5
12R 12R 12R 12R	V V V	1 2 3 4	11.0 11.0 11.5
12L 12L 12L 12L	K K K	1 2 3 4	13.0 14.5 17.0
12L 12L 12L 12L	B B B	1 2 3 4	13.0 14.5
12L 12L 12L 12L	F F F	1 2 3 4	11.0 15.5 15.5
12L 12L 12L 12L	V V V	1 2 3 4	10.0 14.5 14.5

Experiment 11--Runway 24

IFR2 Baseline
1979 Demand and Mix
Present ATC Procedures

## A. Logistics

- 1. Title: Lambert-St. Louis International Airport Experiment 11
- 2. Random Number Seeds: 2017, 3069, 4235, 5873, 6981, 7137, 8099, 9355, 0123, 1985
- 3. Start and Finish Times: 0700 to 2200
- 4. Print Options: Standard options including summary outputs
- 5. <u>Airline Names</u>: AA American AL - USAir BN - Braniff

BN - Braniff DL - Delta EA - Eastern FL - Frontier

NW - Northwest Orient

OZ - Ozark RC - Republic

TI - Texas International TW - Trans World Airlines

AT - Air Taxi AF - Air Freight ML - Military

GA - General Aviation

SS - Supplemental

- 6. Processing Options: COMPUTE
- 7. Truncation Limits: + 2 standard deviations
- 8. Time Switch: Not applicable

# B. Airfield Physical Characteristics

- 9. Airfield Network: See Exhibit 1.
- 10. Number of Runways: 1
- 11. Runway Identification: 24
- 12. Departure Runway End Links: for 24 Taxiway B
- 13. Runway Crossing Links: None
- 14. Exit Taxiway Locations:

Runway	Exit	Feet from threshold
24	С	7,620
	L	6,035
	A	5,190
	P	3.800

15. Holding Area-Link Number: 47

16.	Airline Gates:	American -	3
		Braniff -	1
		Delta -	2
		Eastern -	1,2
		Frontier -	4
		Northwest Orient -	6
		USAir -	1
		Ozark -	6
		Republic -	5
		TI -	1
		TWA -	5
		Air Taxi -	1,3
		Air Freight -	6
		Supplemental -	6

17. General Aviation Basing Areas: 7, 8, 9, 10, 11, 12, 13, and 14

# C. ATC Procedures

# 18. Aircraft Separations:

Arrival-Arrival Separation (nautical miles)

		Trail	Airc	Class	
		A	_B_	<u>C</u>	D
7 3	A	3.8	4.0	4.1	4.2
Lead	В	3.8	4.0	4.1	4.2
Aircraft	C	4.8	5.0	4.1	4.2
Class	D	6.8	7.0	6.1	5.2

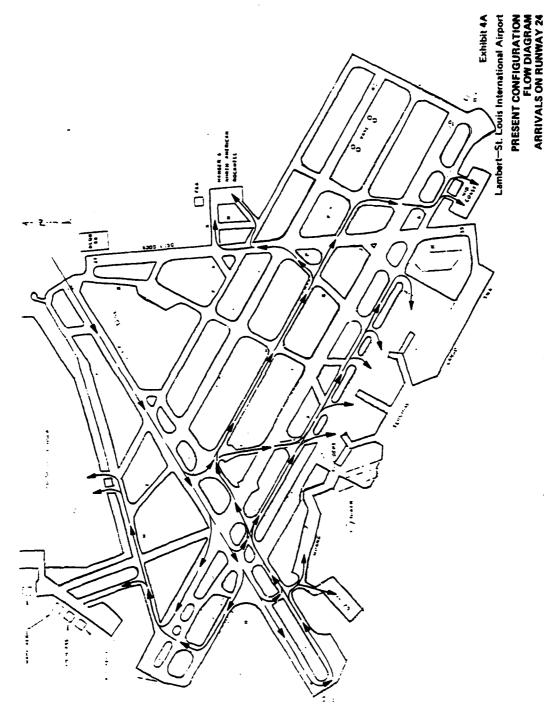
Departure-Departure Separations (seconds)

		Trail	Aircraft		Class
		A	В	C	D
<b>.</b>	A	60	60	60	60
Lead	В	60	60	60	60
Aircraft	C	60	60	60	60
Class	D	120	120	120	90

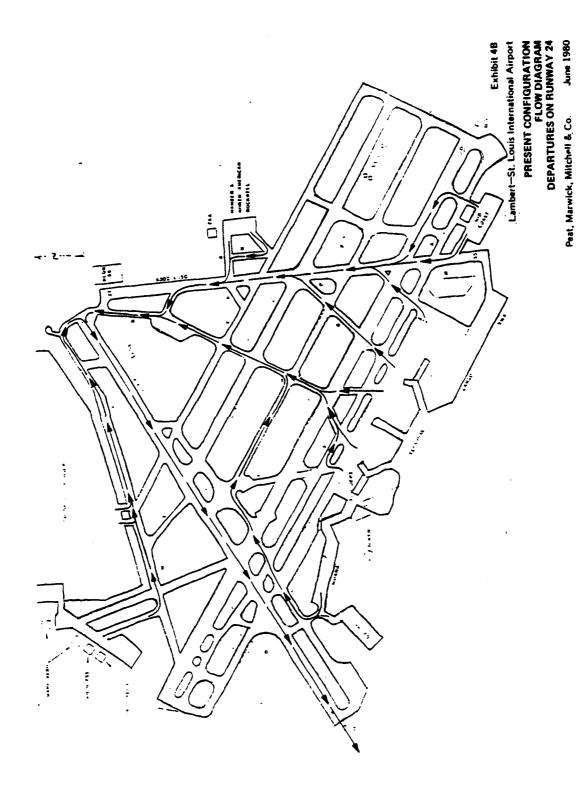
Departure-Arrival Separation (nautical miles)

		Trail Aircraft			Class
		A	В	С	D
* 3	A	2.0	2.0	2.0	2.0
Lead	В	2.0	2.0	2.0	2.0
Aircraft Class	С	2.0	2.0	2.0	2.0
	D	2.0	2.0	2.0	2.0

- 19. Route Data: See Exhibits 4a and 4b.
- 20. Two-Way Path Data: See Exhibits 4a and 4b.



June 1980 Peat, Marwick, Mitchell & Co.



## 21. Common Approach Paths:

Aircraft	Length
class	(nautical miles)
A	6.0
В	6.0
C	6.0
D	6.0

- 22. <u>Vectoring Delays</u>: Report sum of speed control, vectoring, and holding delay as one toal.
- 23. Departure Runway Queue Control: Not used.
- 24. Gate Hold Control: When Runway 24 queue exceeds 10.
- 25. Departure Airspace Constraints: Specified in separations and no aircraft held at gate due to airspace constraints.
- 26. Runway Interarrival Gap: Arrival separations increase from those specified in No. 18 to 8 miles when departure queue exceeds 6 on Runway 24.
- 27. Runway Crossing Delay Control: No runway crossing links.

#### 28. Exit Taxiway Utilization (percent):

Runway	Class	Exit				
		P	<u>A</u>	L	<u></u>	
24	A	100				
	В	82	18			
	C	2	50	40	8	
	D		14	58	28	

#### 29. Arrival Runway Occupancy Times (seconds):

Runway	Class		Ex	Weighted		
	<del></del>	P	A	Ŀ	<u></u>	average
24	A	58				58
	В	51	67			54
	С	43	58	66	80	63
	D		58	66	80	69

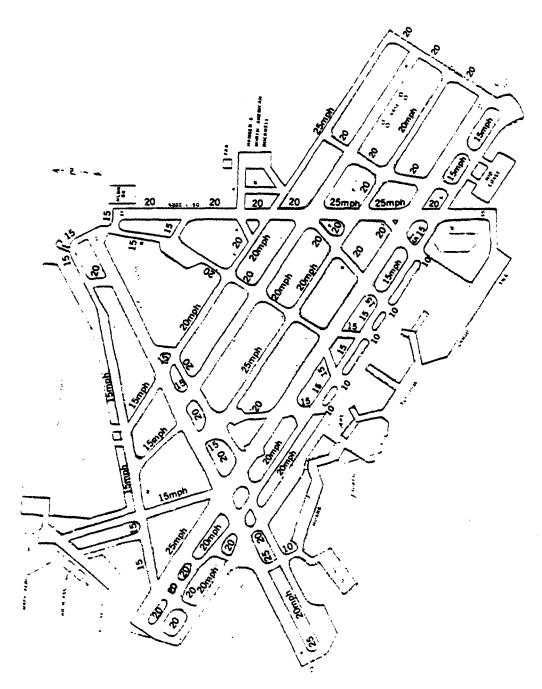
- 30. Touch and Go Occupancy Times: No touch and go's.
- 31. Departure Runway Occupancy Times (seconds):

Aircraft class	Mean	Standard deviation
A	34	4
В	34	4
С	39	4
D	39	4

- 32. Taxi Speeds (mph): 5, 10, 15, 20, 25, and 35 (see Exhibit 4c).
- 33. Approach Speeds (knots):

Aircraft class	Mean	Standard deviation		
A	95	10		
В	120	10		
С	130	10		
D	140	10		

- 34. Gate Service Times: To be supplied by airport task force
- 35. Airspace Travel Times: See Table 3.
- 36. Runway Crossing Times: 20 seconds
- 37. <u>Lateness Distribution</u>: To be supplied by airport task force
- 38. Schedule: 1979 Demand and Mix (Table 15)



Lambert-St. Louis International Airport GENERALIZED TAXIWAY SPEEDS FOR ARRIVALS AND DEPARTURES ON RUNWAY 24 June 1980 Peat, Marwick, Mitchell & 'Co

Table 3

ARRIVAL FIX TRAVEL TIME--EXPERIMENT 11
Lambert-St. Louis International Airport
Airport Improvement Task Force Delay Studies

Runway name	Fix code	Class	Travel time (minutes)
24	ĸ	1	10.5
24	K	2	10.5
24	ĸ	3	12.5
24	K	4	13.0
24	В	1	
24	В	2	14.5
24	В	3	14.5
24	В	4	
24	F	1	12.5
24	F	2	12.5
24	F	3	16.5
24	F	4	
24	V	1	
24	v	2	13.0
24	v	3	16.5
24	v	4	

	SIM	TLATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
		etics	
		Title	7
		Random number seeds	Lambert-St Louis International Airport-EXP. 2
		Start and finish times	
		Print options	
		Airline names	
		Processing options	
		Truncation limits	
		Time switch	
<b>5.</b>	ALTÍ	ield Physical Characteristics	
		Airfield network	
	10	Number of runways	
	11	Runway identification	
-	12.	Departure runway end links	
	13	Runway crossing links	
	14	Exit taxiway location	
·		Holding areas	
·		Airline gates	
<del></del>		General aviation basing areas	
<u>e.</u>	ATC	Procedures	
,	18	Aircraft separations	IFR1 separations (Table 4)
1	19	Route data	
	20	Two-way path data	
	21	Common approach paths	All common approach path lengths are 6 nautical mil
	22	Vectoring delays	
	23	Departure runway queue control	·
	24	Gata hold control	
	25	Departure airspace constraints	
	26		
<b></b>	27	Runway crossing delay control	
<u> </u>			
4:	_	Taft Operational Characteristics	
	28		
<u> </u>	29	Arrival runway occupancy times	
	30	Touch-and-go runway occupancy times	
<b> </b>	31	Departure runway occupancy times	
	12	Taxi speeds	
-	33	Approach speeds	
<b></b>	34		
-	25	Airspace travel times	
<del></del>	36	Runway crossing times Lateness distribution	
<u> </u>	38	والمنافية	1070
-			1979 IFR1 demand and mix (Table 15)

Table 4
Aircraft Separations (IFR1)

Arrival-Arrival Separation (nautical miles)

		Trail Aircraft			Class
		A	В	С	D
Lead	· <b>A</b>	3.8	4.0	4.1	4.2
Aircraft Class	В	3.8	4.0	4.1	4.2
	С	4.8	5.0	4.1	4.2
	D	6.8	7.0	6.1	5.2

Departure-Departure Separations (seconds)

		Trail Aircraft Class				
		A	В	<u>C</u>	D	
Lead Aircraft Class	A	60	60	60	60	
	В	60	60	60	60	
	С	60	60	60	60	
	D	120	120	120	90	

Departure-Arrival Separation (nautical miles)

		Trail	Airo	raft	Class
		A	В	С	D
Lead Aircraft Class	A	1.1	1.4	1.5	1.6
	В	1.1	1.4	1.5	1.6
	C	1.8	1.8	1.8	1.8
Class	D	1.8	1.8	1.8	1.8

Experiment Number: 3 (Input changes from experiment number 2 )

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. <u>Logistics</u>	Lambert-St. Louis International Airport-Exp. 3
1 Title	
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
1 Time switch	
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
11 Runway identification	
12' Departure runway end links	
13 Runway crossing Links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	IFR2 separations (Table 5)
19 Route data	·
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	·
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	IFR2 exit taxiway utilizations (Table 6)
29 Arrival runway occupancy times	
10 Touch-end-go runway occupancy times	
31 Ceparture runway occupancy times 32 Taxi speeds	
32 Taxi speeds  13 Approach speeds	
34 Gate service times	
35 Airspace travel times	
15 Runway crossing times	
17 Lateness distribution	IFR2 crossing clearance times (Table 5)
38 Demand	1070 7772 2000 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	1979 IFR2 Demand and Mix (Table 15)

Table 5
Aircraft Separations (IFR2)

Arrival-Arrival Separation (nautical miles)

		Trail Aircraft			Class
		<u>A</u>	В	С	D
Lead Aircraft	A	3.8	4.0	4.1	4.2
	В	3.8	4.0	4.1	4.2
	C	4.8	5.0	4.1	4.2
Class	D	6.8	7.0	6.1	5.2

Departure-Departure Separations (seconds)

		<u>Trai</u> l	Airc	Class	
		A	<u>B</u>	С	D
7	A	60	60	60	60
Lead	В	60	60	60	60
Aircraft	С	60	60	60	60
Class	D	120	120	120	90

Departure-Arrival Separation (nautical miles)

		Trail	Airc	Class	
		A	В	C	D
T 3	A	2.0	2.0	2.0	2.0
Lead	В	2.0	2.0	2.0	2.0
Aircraft	С	2.0	2.0	2.0	2.0
Class	D	2.0	2.0	2.0	2.0

Table 6

IFR2 EXIT TAXIWAY UTILIZATION AND RUNWAY CROSSING CLEARANCE TIMES

Exit Taxiway Utilization (percent)

Runway	Class		_	_	_	_	_	_
		<u>17-3</u>	<u>5</u>	<u>J</u>	G	В	<u> </u>	<u>R</u>
12R	A						100	
	В	23		10	13	46	8	
	С	19		17	39	20		5
	D	15		28	43	4		10
		R	<u>N</u>	G	<u>17-3</u>		<del>-</del>	
12L	A		10	8	9		-	
	В	10	16	40	34			
	С	75	25					
	D	100						

				C	rossi	ng cl	earan	ce ti	mes (	secon	ds)		
	-	Arrival		Departure				Arrival on final					
Run-	Crossing		C	runwa			on ru						
way	link	<u>v</u>	<u></u>	<u>B</u>	<u>A</u>	<u>D</u>	<u>c</u>	<u>B</u>	<u>A</u>	<u>D</u>	<u>c</u>	<u>B</u>	<u>A</u>
12R	R	71	67	70	60	57	57	52	52	20	20	20	20
12R	G	67	66	70	60	48	48	52	52	22	24	26	32
12R	E	44	48	54	60	37	37	39	42	34	37	40	40
12R	Midcoast	71	67	70	60	53	53	52	52	20	20	20	20
12R	С	39	39	47	54	26	26	28	30	37	40	43	55
12R	В	56	56	65	60	44	44	47	49	27	30	32	40
12L	17-35	43	43	51	58	37	37	38	40	34	37	40	50
12L	6-24	25	25	25	25	25	25	25	25	51	55	60	76

	SIM	JLATION MODEL INPUT	description of input change
٠.	Logi	sties	
	1	Title	Lambert-St. Louis International Airport-Exp. 5
		Random number seeds	Lambert-St. Louis International Airbort-Exc. 5
		Start and finish times	
		Print options	
	5	Airline names	
	6	Processing options	
	7	Truncation limits	
		Time switch	
	·		
ъ.	Aire	ield Physical Characteristics	
		Airfield network	
		Number of runways	
		Runway identification	
		Departure runway end links	
	13	Runway crossing links	
	14	Exit taxiway location	
	15	Solding areas	
	16	Airline gates	
<b>-</b>		General aviation basing areas	
_	377	Procedures	
<b>├</b> <del>-</del>	_==		
<u> </u>		Aircraft separations	IFR1 separations (Table 4)
	19	Route data	
	20	Two-way path data	
	21	Common approach paths	All common approach path lengths are 6 nautical mil
	22	Vectoring delays	
!	23	Departure runway queue control	•
	24	Gate hold control	
1	25	Departure airspace constraints	
	26	Departure queue	
	27	Runway crossing delay control	
<del>                                     </del>			
<u>۔</u>	Aire	maft Operational Characteristics	
_==	29		
<b>'</b>	29	Arrival runway occupancy times	
	30	Touch-and-go runway occupancy times	
<u></u>	31	Departure runway occupancy times	<u> </u>
`	32	Taxi speeds	
	33	Approach speeds	
	34	Gate service times	
	35	Airspace travel times	
	36	Runway crossing times	
	37	Lateness distribution	
`	38		1979 TED1 damand and mix (=
<b></b>			1979 IFR1 demand and mix (Table 15)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4. Logistics	
1 Title	Lambert-St. Louis International Airport-Exp. 6
2 Random number seeds	
3 Start and finish times '	
4 Frint options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	· ·
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway and links	
13 Runway crossing links	
14 Exit taxivey location	
15 Holding areas	
l6 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	IFR2 separations (Table 5)
20 Thro-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
2' Gate held control	
Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	IFR2 exit taxiway utilization (Table 7)
29 Arrival runway occupancy times	
10 Touch-and-go runway occupancy times	
31 Caparture runway occupancy times	
32 Taxi speeds	
13 Approach speeds	
34 Gate service times	
35 Airspace travel times	
36 Runway crossing times	IFR2 runway crossing clearance times (Table 7)
37 Laceness discribution	
· · · · · · · · · · · · · · · · · · ·	1979 IFR2 demand and mix (Table 15)

Table 7

1FR2 EXIT TAXIWAY UTILIZATION AND RUNWAY CROSSING CLEARANCE TIMES

#### Exit Taxiway Utilization (percent):

Runway	Class			Exit				
		В	G	6-24	17-35			
30R	A B C D	30 30	10 30	10 70 100	90 30			
Runway	Class	<del></del>			Exit			
		6-24	E	-	3- Left	G	<u>J</u>	17-35
30L	A B C D	20 25	5 7	0 2	L5 23	5 65 7	10 20	85

Crossing clearance times (seconds) Arrival Departure Arrival Crossing on runway on final Runon runway link В A D В D C В A way 30R В 17-35 30R 30R 6-24 30L В E 30L 17-35 30L 30L Midcoast 30L G 

SIMUTATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4. Logistics	
1 fiele	Lambert-St. Louis International Airport-Exp. 7
2 Random number seeds	
3 Start and finish times	
4 Frint options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway and links	
11 Runway crossing links	<del> </del>
14 Exit taxivay location	<del> </del>
	<u> </u>
	<u> </u>
- 16 Airline gates	·
17 General aviation basing areas	<u> </u>
} <del></del>	
G. ATC Procedures	
18 Aircraft separations	Except for changes shown in Table 4
19 Route data	`
20 Two-way path data	
21 Common approach paths	All common approach path lengths are 6 nautical mil
22 Vectoring delays	
23 Departure runway queue control	
23 Departure runway queue control 24 Gate hold control	
24 Gats hold control	
24 Gate hold control 25 Departure airspace constraints	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times 35 Airspace travel times	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times 35 Airspace travel times 36 Runway crossing times	
24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times 35 Airspace travel times	1979 IFR1 demand and mix (Table 15)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4. Logistics	
1 Title	Lambert-St. Louis International Airport-Exp. 9
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
1 Time switch	<del></del>
	I .— .— .— .— .— .— .— .— .— .— .— .— .—
b. Airfield Physical Characteristics	
9 Airfield network	<u> </u>
10 Number of Funways	
ll Runway identification	
12 Departure runway and Links	
12 Departure Funday and links 13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
11 Aircraft separations	Except for changes shown in Table 4
19 Routa data	· · · · · · · · · · · · · · · · · · ·
20 Two-way path data	
21 Common approach paths	All common approach path lengths are 6 nautical mil
22 Vectoring delays	
23 Departure runway queue control	·
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
30 Touch-and-go runway occupancy times	
31 Separture runway occupancy times	
32 Taxi speeds	
33 Approach speeds	
34 .Gate service times	
35 Airspace travel times	
36 Runway crossing times	
17 Lateness distribution	
38 Cemand	1979 IFR1 demand and mix (Table 15)
i .	

Experiment Number: 10 (Input changes from experiment number 9 )

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logistics	
l Title	Lambert-St. Louis International Airport-Exp. 10
2 Random number seeds	Damber C-St. 1001S IIICETHAL LUNAL STEAM
1 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
ll Runway identification	
12' Departure runway and links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	(7.1)
18 Aircraft separations 19 Route data	IFR2 separations (Tables 5 and 8)
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gata hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
29 Exic taxiway ucilization	IFR2 exit taxiway utilization (Table 6)
29 Arrival runway occupancy times	
10 Touch-end-go runway occupancy times	
31 Departure runway occupancy times	
32 Taxi speeds	
13 Approach speeds	
34 Gate service times	
35 Airspace travel times	
36 Runway crossing times 37 Lateness distribution	IFR2 runway crossing times (Table 9)
38 Cemand .	1979 IFR2 demand and mix (Table 15)

Table 8

IFR2 SEPARATIONS FOR INTERSECTING RUNWAYS

Departure-Arrival Separation Between Lead Aircraft on Runway 6 and Trail Aircraft on Runway 12R (nautical miles)

		Trail	Class		
		A	В	<u>C</u>	D
T a a d	A	2.2	2.3	2.4	2.4
Lead Aircraft Class	В	2.1	2.3	2.3	2.4
	С	2.1	2.3	2.3	2.4
	D	2.1	2.3	2.3	2.4

Departure-Departure Separation Between Lead Aircraft on Runway 6 and Trail Aircraft on Runway 12R (seconds)

		Trail	Class		
		A	В	<u></u>	D
T a a d	A	40	40	40	40
Lead	В	36	36	36	36
Aircraft	С	35	35	35	35
Class	D	35	35	35	35

Table 8 - Continued

Departure-Departure Separation Between Lead Aircraft on Runway 12R and Trail Aircraft on Runway 6 (seconds)

		Trail	Air	craft	Class
		A	В	<u></u>	D
	A	32	32	32	32
Lead	В	30	30	30	30
Aircraft	С	30	30	30	30
Class	D	30	30	30	30

Arrival-Departure Separation Between Lead Aircraft on Runway 12R and Trail Aircraft on Runway 6 (seconds)

		Trail	Air	craft	Class
		A	В	<u>C</u>	D
	A	33	33	33	33
Lead	В	23	23	23	23
Aircraft	С	11	11	11	11
Class	D	10	10	10	10

Table 9
RUNWAY CROSSING LINKS CLEARANCE TIMES

Clearance crossing times (seconds) Arrival Departure Arrival on final Crossing on runway Runon runway link D В D В D C way 12R M 12R R 12R G 44` 12R Ē 12R В 12R Midcoast 17-35 12L В 12L G 12L F A I L 

STATE AUTON MODEL TARRES	DESCRIPTION OF INPUT CHANGE
SIMULATION MODEL INPUT	DESCRIPTION OF IMPUT CHANGE
a. Logistics	
1 Title	Lambert-St. Louis International Airport-Exp. 13
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
h. Airfield Physical Characteristics	
9 Airfield network	<u> </u>
10 Number of runways 11 Runway identification	
12 Departure runway and links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
T. Venezat extension negative estates	
c. ATC Procedures	
18 Aircraft separations	IFR1 separations (Table 4)
19 Route data	Take the second
20 Two-way path data	
21 Common approach paths	All common approach path lengths are 6 nautical mile
22 Vectoring delays	
23 Departure runway queue control	
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Aumway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
10 Touch-and-go runway occupancy times	
31 Separture runway occupancy times	
32 Taxi speeds	
13 Approach speeds	
34 Gate service times	
15 Airspace travel times	
16 Runway crossing times	
17 Lateness distribution	
38 Demand	1979 IFR1 demand and mix (Table 15)

Experiment Number: 26 (Input changes from experiment number 1)

6 <b>7</b> 1.0	TARTON MODEL THEFT	DESCRIPTION OF IMPUT CHANGE
SIMULATION MODEL INPUT		DESCRIPTION OF THE OF CHURCH
	stics	
	Title	Lambert-St. Louis International Airport-Exp. 26
	Random number seeds	
	Start and finish times	
	Print options	
	Airline names	
	Processing options	
	Truncation limits	
·	Time switch	
	ield Physical Characteristics	
9	Airfield network	
10	Number of runways	
1111	Runway identification	
12.	Departure runway end links	
13	Runway crossing links	<u></u>
	Exit taxiway location	
25	Holding areas	
<del></del>	Airline gates	
17	General aviation basing areas	
<b></b>		
·	Procedures	
18	Aircraft separations	
19	Route data	
20	Two-way path data	
21	Common approach paths	
	Vectoring delays	
23		
<del></del>	Gate hold control	
25	Departure airspace constraints	
25	والمستوال	
27	Runway crossing delay control	
	raft Operational Characteristics	
28		
29	Arrival Funway occupancy times	
30		
31		
32		
33		
35		
36	والمستقد والمراوية والمستود	
	Lateness distribution	
38		
		1985 VFR demand and mix (Table 16)
1	·	

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logistics	
1 Title	Lambert-St. Louis International Airport-Exp. 27
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	·
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
<del> </del>	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	<del></del>
22 Vectoring delays	
23 Departure runway queue contro 24 Gate hold control	<u> </u>
25 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristi	CS
28 Exit taxiway utilization	
29 Arrival runway occupancy time	1
30 Touch-and-go runway occupancy	times
31 Separture runway occupancy ti	nes .
12 Taxi speeds	
33 Approach speeds	
34 Gate service times	
25 Airspace travel times	
16 Runway crossing times	
37 Lateness distribution	
38 Cemand	1985 IFR1 demand and mix (Table 16)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4. Logistics	
1 fittle	Lambert-St. Louis International Airport-Exp. 28
2 Sandon number seeds	
3 Start and finish times	
4 Frint options	
5 Airline names	
6 Processing options	
7 fruncation limits	
8 fime switch	
b. Airfield Physical Characteristics	· ·
9 Airfield network	
10 Number of runways	
11 Sunway identification	
12 Departure runway and links	
13 Runway crossing links	 
14 Exit taxiway location	
15 Solding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control 24 Gate hold control	
25 Departure airspace constraints 26 Departure queue	
27 Runway crossing delay control	
· · · · · · · · · · · · · · · · · · ·	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
10 Touch-end-go runway occupancy times	
31 Separture runway occupancy times	
32 Taxi speeds	
33 Approach speeds	
34 Gate service times	
15 Airspace travel times	
36 Runway crossing times	
37 Lateness distribution	
38 Demand	1985 1FR2 demand and mix (Table 16)

SIMULATION MODEL INPUT		DESCRIPTION OF INPUT CHANGE
a. Logistics		
1	Title	Lambert-St. Louis International Airport-Exp. 30
2	Mandom number seeds	
3	Start and finish times	
4	Print options	
5	Airline names	
6	Processing options	
7	Truncation limits	
1	Time switch	
b. Airfi	eld Physical Characteristics	,
<u> </u>	Airfield network	
10	Number of runways	
11	Runway identification	
	Departure runway end links	
13	Runway crossing links	
14	Exit taxiway location	
1.5	Holding areas	
· 16	Airline gates	
17	General aviation basing areas	
<u></u>		
	rocedures	
<del></del>	Aircraft separations	
	Route data	
20	Two-way path data	
	Common approach paths	
<del></del>	Vectoring delays	
23	Departure runway queue control	
<u> </u>	Gate hold control	
25	Departure queue	
25		
	Runway crossing delay control	
d. Airca	raft Operational Characteristics	
	Exit taxiway utilization	
	Arrival runway occupancy times	
31	Ceparture runway occupancy times	
32	Taxi speeds	
33		<u> </u>
34		
35		
36		
37	Lateness distribution	
38	Cemand	1985 IFR1 demand and mix (Table 16)

SIMUL	ATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logist		
	itle	Lambert-St. Louis International Airport-Exp. 31
	andom number seeds	added to the sound interest interest sales of
	tart and finish times	
	Tint options	
	irline names	
	rocessing options	
	Tuncation limits	
	ine switch	
h. sirdia	ld Physical Characteristics	
	irfield network	
	Number of runways	
	hunway identification	
	Departure runway and links	
	Runway crossing links	
	Exit taxiway location	
	Solding areas	
	Airline gates	
	General aviation basing areas	
c. ATC Pr	rocedures	
	Aircraft separations	
19 F	Route data	
20 1	Two-way path data	
21 0	Common approach paths	
22 7	Vectoring delays	
23 1	Departure runway queue control	
24 (	Gate hold control	
25	Departure airspace constraints	
25	Departure queue	
27	Runway crossing delay control	
d. Aircr	aft Operational Characteristics	
28	Exit taxiway utilization	
	Arrival runway occupancy times	
ļ	Touch-and-go runway occupancy times	
	Ceparture runway occupancy times	
<del></del>	Taxi speeds	
<b></b>	Approach speeds	
	Gate service times	
	Airspace travel times	
<del></del>	Runway crossing times	
	Lateness distribution	1005 7000 1 1004 1004 (7.13.16)
18	Demand	1985 IFR2 demand and mix (Table 16)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logistics	
l Title	Lambert-St. Louis International Airport-Exp. 32A
2 Random number seeds	Bambert St. Bodis International Alipoit-EAD. 52A
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
1 Time switch	
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
11 Runway identification	· · · · · · · · · · · · · · · · · · ·
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	<u> </u>
c. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gate hold control	
25 Departure airspace constraints	
25 Departure queue	
27 Runway Prossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times 30 Touch-end-go runway occupancy times	
31 Separture runway occupancy times	
32 Taxi speeds	
33 Approach speeds	·
34 Gate service times	
15 Airspace travel times	
36 Runway crossing times	
17 Lateness distribution	
38 Demand	1985 VFR demand and mix (Table 16)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4. Logistics	
1 Title	Lambert-St. Louis International Airport-Exp. 32
2 Random number seeds	
3 Start and finish times	
4 Frint options	
5 Airline names	
6 Processing options	
7 Truncation limits	
1 Time switch	
b. Airfield Physical Characteristics	` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` `
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
16 Airline gates	
17 General aviation basing areas	<u></u>
c. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	·
24 Gate hold control	
25 Departure airspace constraints	
25 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Affival runway occupancy times	
10 Touch-and-go runway occupancy times	
31 Separture runway occupancy times	
32 Taxi speeds	
33 Approach speeds	
34 Gate service times  13 Airspace travel times	
15 Airspace travel times 16 Runway crossing times	
17 Lateness distribution	
38 Demand	1985 IFR1 demand and mix (Table 16)
	TAGE TENT MEMBER SING WITH TENTE TO!

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SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4. Logistics	
1 Title	Lambert-St. Louis International Airport-Exp. 33
2 Random number seeds	Dambelt-St. Dours International Arrostt-PAD. 33
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Tima switch	
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	,
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	•
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
10 Touch-and-go runway occupancy times	
31 Departure runway occupancy times	
32 Taxi speeds	
33 Approach speeds	
34 Gate service times	
15 Airspace travel times	
36 Runway crossing times	
17 Lateness distribution 18 Demand	1005
	1985 IFR1 demand and mix (Table 16)
•	

ļ	Q T MT	ILATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
			SUSCREPTION OF THE OF CHIEFOT
4.		ities	74 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
		Title	Lambert-St. Louis International Airport-Exp. 34
<b></b>		Random number seeds	
		Start and finish times	
		Print options	
		Airline names	
<u></u>		Processing options	
	7	Truncation limits	
		Time switch	
<u>b.</u>	Airt	ield Physical Characteristics	•
<u> </u>	9	Airfield network	
	10	Number of runways	
	11	Runway identification	
	12	Departure runway and links	
	1,3	Runway crossing links	
	14	Exit taxiway location	
	15	Solding areas	
	16	Airline gates	
	17	General aviation basing areas	
<u>e.</u>	ATC	Procedures	
•	18	Aircraft separations	
	19	Route: data	•
	20	Two-way path data	
	21	Common approach paths	
	22	Vectoring delays	
	23	Departure runway queue control	
	24	Gate hold control	
	25	Departure airspace constraints	
	25	Departure queue	
	27	Runway crossing delay control	
d.	Aire	raft Operational Characteristics	
	28	Exit taxiway utilization	
	29	Arrival runway occupancy times	
	30	Touch-and-go runway occupancy times	
	31	Ceparture runway occupancy times	
	12	Taxi speeds	
	33	Approach speeds	
	34	Gate service times	
	15	Airspace travel times	
	36	Runway crossing times	
	37	Lateness distribution	
	38	Demand	1985 IFR1 demand and mix (Table 16)
		·	

Experiment Number: 35 (Input changes from experiment number 26)

<del></del>	<del></del>
SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. <u>Logistics</u>	
l Title	Lambert-St. Louis International Airport-Exp. 35
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
1 Time switch	
·	
b. Airfield Physical Characteristics	
9 Airfield network	Extension of parallel runways (Exhibit 5)
10 Number of runways	
11 Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	Nov. Yumana ouit distances (Mahla 10)
15 Holding areas	New runway exit distances (Table 10)
· 16 Airline gates	
17 General aviation basing areas	
and the state of t	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	Var moute data (Tubibiba Ca' and CD)
20 Two-way path data	New route data (Exhibits 6A and 6B)
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	New exit taxiway utilization (Table 11) New arrival runway occupancy times (Table 12)
30 Touch-end-go runway occupancy times	new arrival runway occupancy times (Table 12)
Il Ceparture runway occupancy times	
32 Taxi speeds	New tari anada (Embility CO)
33 Approach speeds	New taxi speeds (Exhibit 6C)
34 Gate service times	
15 Airspace travel times	
16 Runway crossing times	
17 Lateness distribution	
38 Cemand	1985 VFR demand and mix (Table 16)
	1203 VIN Geneally and mix (lable 16)
	<del></del>

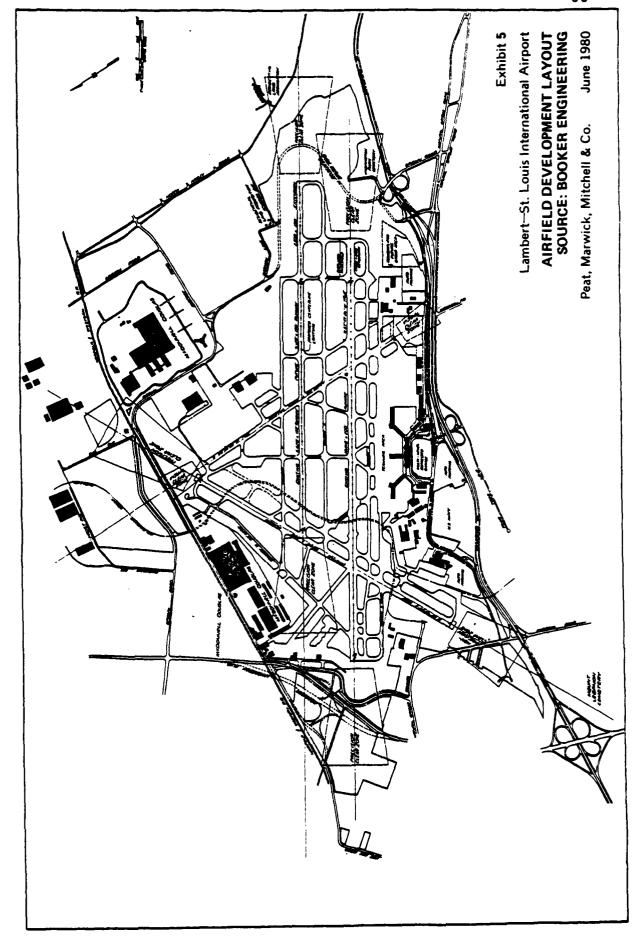


Table 10

# EXIT TAXIWAY LOCATIONS AIRFIELD DEVELOPMENT EXPERIMENTS

Runway	Exit	Feet from threshold
12R	A	11,000
12R	R	9,590
12R	17-35	7,280
12R	J	6,975
12R	G	6,005
12R	В	4,910
12R	E	3,570
12L	P	9,120
12L	A	7,630
12L	R	6,630
12L	N	4,560
12L	G	3,465
12L	17-35	3,465
12L	В	1,945

Table 10 - continued

Runway	Exit	Feet from threshold
30L	A	9,900
30L	С	8,300
30L	E	7,300
30L	В	5,800
30L	G	4,500
30L	J	3,700
30L	17-35	3,250
30L	Midcoast	2,400
30L	R	1,000
30R	A	8,950
30R	В	7,250
30R	17-35	5,250
30R	Midcoast	4,600
30R	6-24	4,250
30R	R	2,500

June 1980

Peat, Marwick, Mitchell & Co.

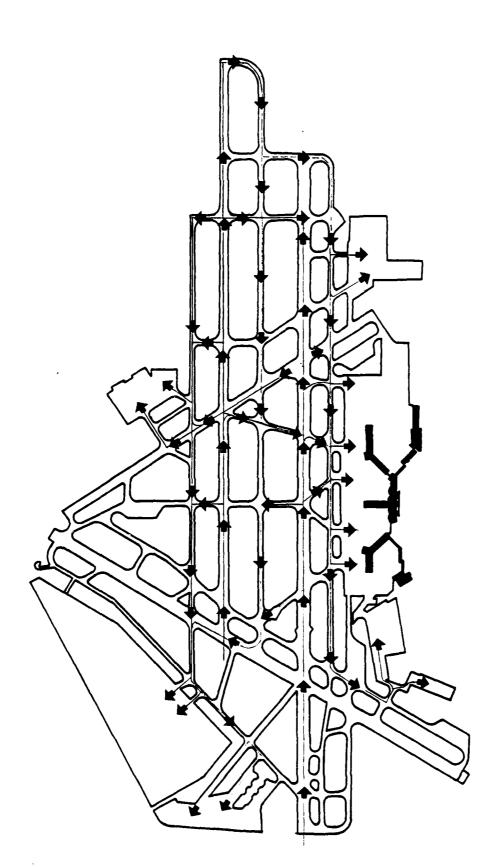
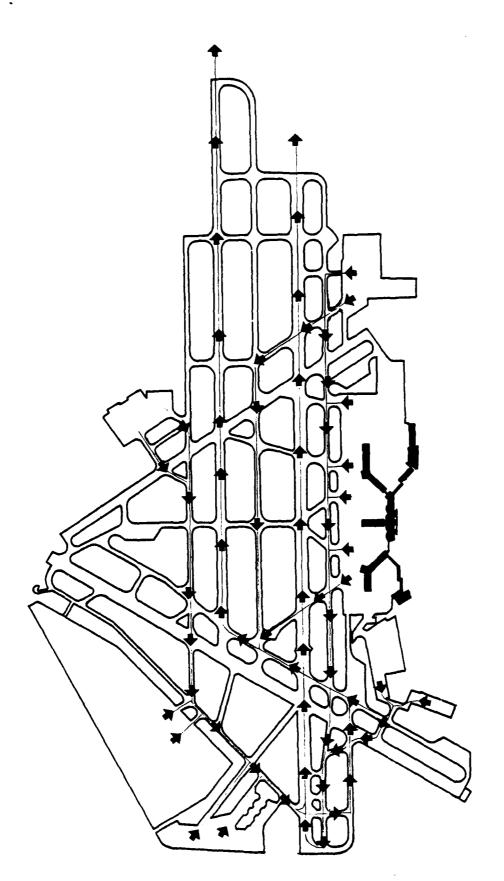


Exhibit 6A rt—St. Louis International Airport

Lambert—St. Louis International Airport
AIRFIELD DEVELOPMENT CONFIGURATION
FLOW DIAGRAM
ARRIVALS ON RUNWAYS 12R AND 12L

June 1980

Peat, Marwick, Mitchell & Co.



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Exhibit 6B

Lambert—St. Louis International Airport
AIRFIELD DEVELOPMENT CONFIGURATION
FLOW DIAGRAM
DEPARTURES ON RUNWAYS 12R AND 12L

Table 11

EXIT TAXIWAY UTILIZATION
AIRFIELD DEVELOPMENT EXPERIMENTS

# Runway 30R

	Exit								
Class	R	Midcoast	G	В	6-24				
A	84	16							
В	2	96	2						
С		8	15	75	2				
D			9	83	8				

Class

A B C D

Runway 30L									
Exit									
Midcoast	17-35	J_	G	В	E	<u>C</u>			
37	47	16							
	40	45	10	5					
			23	52	25				
				36	56	8			

# Runway 12R

	Exit								
Class	R	17-35	<u>J</u>	G	B-left	B-right	E		
A							100		
В		17	6	13	19	27	18		
С		14	17	39	26	2	2		
D	5	10	29	42	14				

## Runway 12L

		Exit									
Class	В	G	17-35	N	R	A	P				
A	83	8	9								
В	2	40	42	16	10						
С			2	33	5 <b>7</b>	8					
D					71	27	2				

Table 12

ARRIVAL RUNWAY OCCUPANCY TIMES (SECONDS)

AIRFIELD DEVELOPMENT EXPERIMENTS

## Runway 30R

	Weighted					
Class	R	Midcoast	В	G	6-24	average
A	39	54				41
В	32	47		52		47
С		42	65	51	69	53
D			65	51	69	54

## Runway 30L

			Exit					Weighted
Class	Midcoast	<u>17-35</u>	J	G	В	E	C	average
A	38	47	52					44
В		39	44	51	54			43
C				42	50	67		52
D					50	67	77	61

# Runway 12R

	Exit								
Class	R	17-35	J	G	B-left	B-right	E	Weighted average	
A							50	50	
В		60	60	53	50	44	40	49	
С		57	56	50	41	38	34	49	
D	83	61	54	57	40			55	

### Runway 12L

Exit								Weighted
Class	В	G	17-35	N	R	A	P	average
A	34	48	48					36
В	27	42	42	52	62			49
C			32	42	65	75		57
D					67	75	90	69

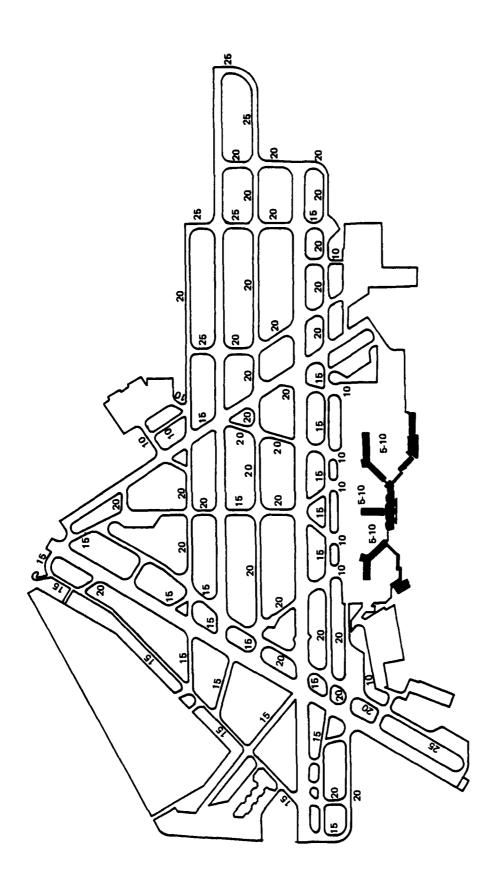


Exhibit 6C Lambert—St. Louis International Airport

Lambert—St. Louis International Airport
GENERALIZED TAXIWAY SPEEDS (MPH) FOR
ARRIVALS AND DEPARTURES ON
RUNWAYS 12R AND 12L

S1	IMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
	gistics	
	1 Title	Lambert-St. Louis International Airport-Exp. 36
	2 Random number seeds	dance of bodis international arrore bas. 30
	3 Start and finish times	
	4 Print options	
	5 Airline names	
	6 Processing options	
	7 Truncation limits	
	Time switch	
	e IIme sarion	<u> </u>
	tedical Short and Characteristics	
<u> </u>	irfield Physical Characteristics	· · · · · · · · · · · · · · · · · · ·
	9 Airfield network	
	10 Number of runways	
	Il Runway identification	
	12 Departure runway end links	
	13 Runway crossing links	
	14 Exit taxiway location	
	15 Holding areas	
	16 Airline gates	
	17 General aviation basing areas	
<u>e. X</u>	TC Procedures	
	18 Aircraft separations	IFR1 separations (Table 4)
	19 Route data	
	20 Two-way path data	
	21 Common approach paths	All common approach path lengths are 6 nautical mil
	22 Vectoring delays	
·	23 Departure runway queue control	·
	24 Gate hold control	
	25 Departure airspace constraints	
	26 Departure queue	
	27 Runway crossing delay control	
<u>d. A</u>	ircraft Operational Characteristics	
	28 Exit taxiway utilization	
	29 Arrival runway occupancy times	
	10 Touch-and-go runway occupancy times	:
	31 Departure runway occupancy times	
	32 Taxi speeds	
	33 Approach speeds	
	14 Gate service times	
	15 Airspace travel times	
	16 Runway crossing times	
	17 Lateness distribution	
:	38 Demand	1985 IFR1 demand and mix (Table 16)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logistics	
l Title	Lambert-St. Louis International Airport-Exp. 38
2 Random number seeds	namber 2 St. Louis International Allouis Lab. 35
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
# Time switch	
b. Airfield Physical Characteristics	
9 Airfield network	Runway extension (Exhibit 5)
10 Number of runways	The state of the s
11 Runway identification	
12 Departure runway end links	Taxiway P for 30R, Taxiway A for 30L
13 Runway crossing links	
14 Exit taxiway location	Additional crossing links (Table 13)  New exit distances (Table 10)
15 Holding areas	New exit distances (lable 10)
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	Additional routes (Exhibits 7A and 7B)
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gate hold control	
25 Departure airspace constraints	
25 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	New exit taxiway utilization (Table 11)
29 Arrival runway occupancy times	New arrival runway occupancy times (Table 12)
30 Touch-and-go runway occupancy times	
11 Departure runway occupancy times	
32 Taxi speeds	New taxi speeds (Exhibit 7C)
33 Approach speeds	
34 Gate service times	
15 Airspace travel times	
36 Runway crossing times	New runway crossing times (Table 13)
38 Jemand	1985 IFR1 demand and mix (Table 16)
15 Airspace travel times	
	The section of the se

Table 13

RUNWAY CROSSING LINKS CLEARANCE TIMES

			A	20	20	70	20	20	20	20	20	20	20	20
	a1	nal	В	20	20	20	20	20	20	20	20	20	20	20
	Arrival	on final	၁	20	20	20	20	20	20	20	20	20	20	20
			۵	20	20	20	20	20	20	20	20	20	20	20
		ļ	<b>A</b>	25	48	39	62	39	48	33	27	41	15	35
	ure	way	B	22	48	39	62	39	48	29	25	36	14	31
mes	Departure	on runway	<u></u>	21	46	37	09	37	46	28	24	31	14	30
Clearance Times			۵	21	46	37	09	37	46	28	24	31	14	30
			A	36	09	48	78	48	09	47	41	45	24	50
Crossing		way	В	30	62	20	81	20	62	39	35	20	19	42
C	Arrival	on runway	0	24	65	53	84	53	65	33	56	44	14	35
			Ω	24	65	53	84	53	65	33	56	44	14	35
		Crossing	link	œ	α	17-35	6-24	æ	ស	17-35	Midcoast	ტ	œ	,
			Runway	30R	30R	30R	30R	30L	30L	30L	30L	30L	30L	30L

June 1980

Peat, Marwick, Mitchell & Co.

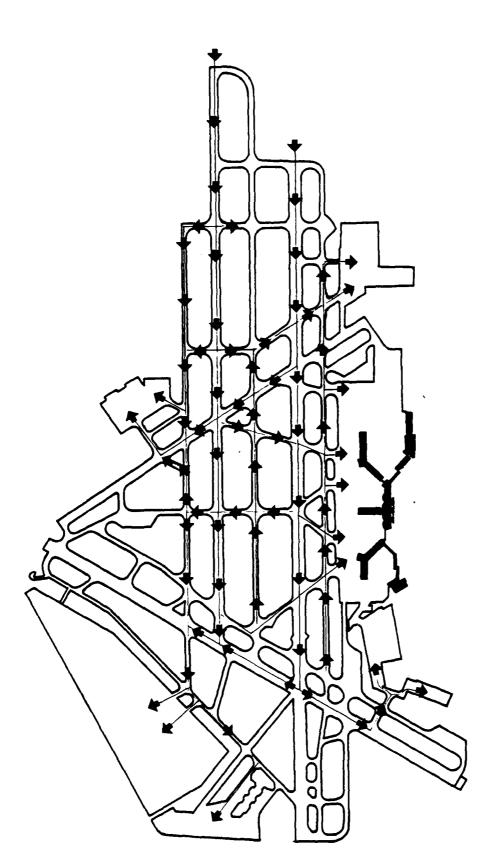


Exhibit 7A
Lambert—St. Louis International Airport
AIRFIELD DEVELOPMENT CONFIGURATION
FLOW DIAGRAM
ARRIVALS ON RUNWAYS 30R AND 30L

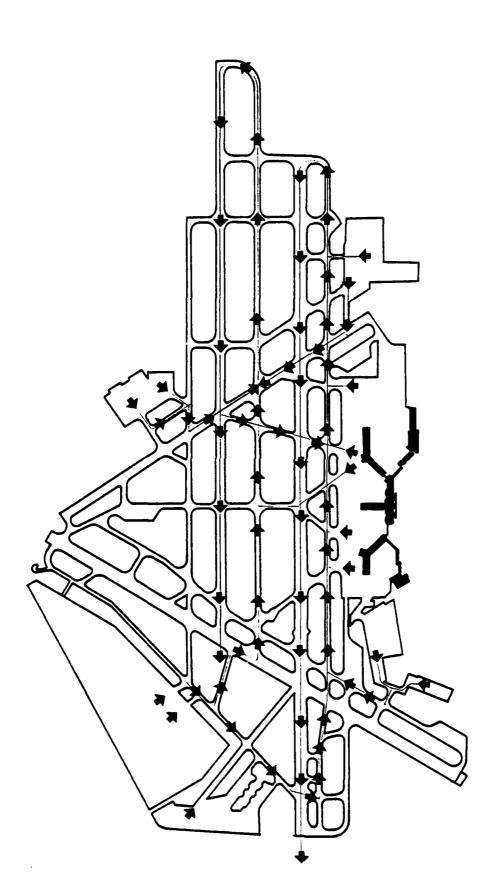


Exhibit 7B

Lambert—St. Louis International Airport

AIRFIELD DEVELOPMENT CONFIGURATION
FLOW DIAGRAM

DEPARTURES ON RUNWAYS 30R AND 30L

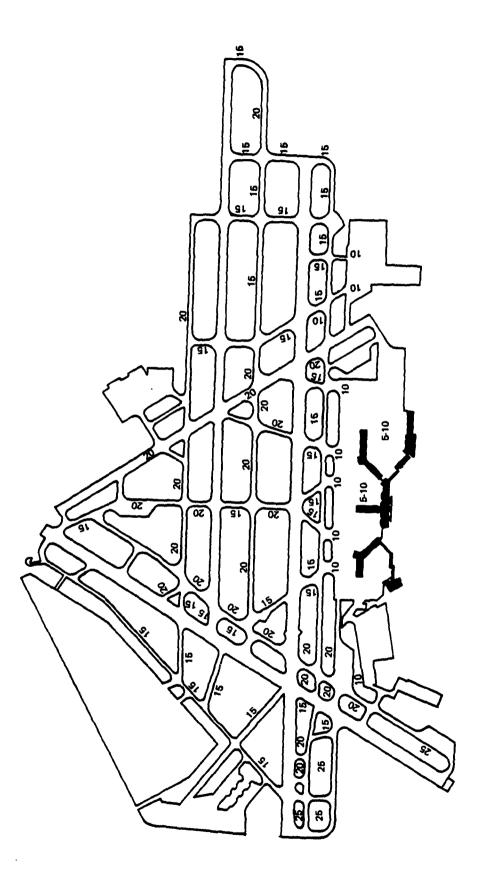


Exhibit 7C
Lambert—St. Louis International Airport
GENERALIZED TAXIWAY SPEEDS (MPH) FOR
ARRIVALS AND DEPARTURES ON
RUNWAYS 30R AND 30L

SIMULATION MODEL INPUT  a. Logistics  1 Table  Lambert-St. Louis International Airport-Exp. 19A  1 Sands mumber seeds  3 Start and finish times  4 Print options  5 Atrilan massas  4 Processing options  7 Truncation options  7 Truncation limits  8 Time switch  b. Airfield Physical Characteristics  9 Atrifield Physical Characteristics  10 Number of runways  11 Numway constaing links  12 Departure runway and links  13 Additional crossing links  14 Additional crossing links  15 Additional crossing links  16 Airline gazes  17 General aviation basing areas  17 Sungaria vitation basing areas  18 Aircraft separations  19 Soute data  10 Common approach paths  21 Veccenting dialays  22 Veccenting dialays  23 Departure runway quans constraints  24 Occupancy airspace constraints  25 Departure airspace constraints  26 Aircraft Coerguional Characteristics  27 Numway crossing delay control  4 Aircraft Coerguional Characteristics  28 Exit cannow occupancy times  29 Approach speeds  11 Approach speeds  12 Carpone crowny occupancy times  13 Approach speeds  14 Gaze service times  15 Approach speeds  16 Sunway crossing times  17 Numway crossing times  18 New Crossing Clearance times (Table 12)  19 Approach speeds  10 Sunway crossing times  New Crossing Clearance times (Table 13)  10 Approach speeds  11 Approach speeds  12 Santa speeds  13 New Crossing Clearance times (Table 13)  14 Santanes distribution  15 Approach speeds  16 Sunway crossing times  New Crossing Clearance times (Table 13)  17 Lateness distribution  18 Sunway crossing times  New Crossing Clearance times (Table 16)		
1 Title   Lambert-St. Louis International Airport-Exp. 39A   2 Random number seeds	SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
2 Bandom number seeds 3 Start and finish times 4 Frita options 5 Mirline names 6 Frocessing options 7 Truncation Lists 8 Time switch  b. Mirfield Physical Characteristics 7 Start and finish Lists 8 Time switch  b. Mirfield Physical Characteristics 9 Mirfield Physical Characteristics 10 Number of runways 11 Numway identification 12 Departure runway and Links 13 Numway crossing Links 14 Exit taxivay location 15 Solding areas 16 Mirline gates 17 General avistion basing areas 18 Mircraft separations 19 Note data 10 Two-way path data 11 Common approach paths 12 Vectoring delays 13 Departure runway queue control 14 date hold control 15 Departure runway queue control 16 Departure queue 17 Representations 18 Alternate sirpsen constraints 19 Departure runway queue control 10 Departure runway queue control 11 Caparture runway queue control 12 Departure runway queue control 13 Departure runway queue control 14 date hold control 15 Departure runway queue control 16 Departure runway queue control 17 Caparture runway queue control 18 Exit taxiway utilization 19 New exit taxiway utilization (Table 11) 19 New runway arrival occupancy times 10 Theresel-go runway occupancy times 11 Taxi speeds 12 Reparture runway occupancy times 13 Leparture times 14 Caparture times 15 Alexpace travel times 16 Automy crossing times 17 Lateness distribution 18 New crossing clearance times (Table 13)	a. <u>Logistics</u>	
3 Start and finish times 4 Print options 5 Nifiles masss 6 Proceeding options 7 Truncation limits 8 Time switch  5 Niffield Physical Characteristics 9 Niffield Physical Characteristics 10 Number of runway 11 Number of runway 12 Departure runway and limits 13 Taxiway "P" for 30R and Taxiway "A" for 30L 14 Number of start and limits 14 Exit taxiway location 15 Nolding areas 16 Nifiles gates 17 General aviation basing areas 18 Nifiles gates 19 General aviation basing areas 11 Niveraft separations 12 Note data 13 New route data (Exhibits SR and SB) 10 Toway path data 11 Common approach paths 12 Vectoring dalays 13 Departure runway quous control 14 Gate hold control 15 Departure quous 17 Runway crossing delay control 18 Niveraft Operational Characteristics 18 Exit taxiway utilization 19 New axit taxiway utilization (Table 11) 19 Arrival runway occupancy times 10 Toward path seeds 11 Ceparture runway occupancy times 12 Taxi speeds 13 Arrayed crosseds 14 Gate service times 15 Alrapace travel times 16 Alrapace travel times 17 Alrapace travel times 18 Alrapace travel times 19 Alrapace travel times 19 Alrapace travel times 19 Alrapace travel times 10 Alrapace travel times 11 Alrapace travel times 12 Alrapace travel times 13 Alrapace travel times 14 Cateness distribution 15 New crossing clearance times (Table 13) 17 Lateness distribution	l Title	Lambert-St. Louis International Airport-Exp. 39A
4 Print options 3 Migline names 4 Processing options 7 Truncation limits 8 Time switch  2 Minifield Physical Characteristics 9 Minifield Physical Characteristics 10 Number of runways 11 Runway Identification 12 Departure runway and limits 13 Munway crossing limits 14 Additional crossing limits (Table 13) 15 Minifield Physical Characteristics 16 Minifield Physical Characteristics 17 Departure runway and limits 18 Additional crossing limits (Table 13) 19 Minifield Physical Characteristics 10 Minifield Physical Characteristics 10 Minifield Physical Characteristics 11 Minifield Physical Characteristics 12 Vectoring delays 13 Departure runway guous control 14 Gate hold control 15 Departure runway guous control 16 Alteraft Departure quous 17 Runway crossing delay control 18 Arteraft Departure runway occupancy times 19 Artival runway occupancy times 10 Touch-end-go runway occupancy times 11 Departure runway occupancy times 12 Paparture runway occupancy times 13 Arteraft Departure runway occupancy times 14 Cate service times 15 Alteraft Departure runway occupancy times 16 Minifield Physical Characteristics 17 Taxi speeds 18 Alteraft Departure runway occupancy times 19 New taxi speeds (Exhibit 8C) 19 Approach speeds 10 Alterafe Departure runway occupancy times 11 Caparture runway occupancy times 12 Taxi speeds 13 Alterafe Departure runway occupancy times 14 Gate service times 15 Alterafe Departure runway occupancy times 16 Alterafe Departure runway occupancy times 17 Taxi speeds 18 New taxi speeds (Exhibit 8C) 19 Approach speeds 19 Arterafe Departure runway occupancy times 10 Alterafe Departure runway occupancy times 11 Caparture runway occupancy times 12 Artival runway occupancy times 13 Alterafe Departure runway occupancy times 14 Cate service times 15 Alterafe Departure runway occupancy times 16 Alterafe Departure runway occupancy times 17 Taxi speeds 18 New taxi speeds (Exhibit 8C) 19 Approach speeds 19 Alterafe Departure runway occupancy times 19 Alterafe Departure runway occupancy times 19 New crossing clearance t	2 Random number seeds	
3 Mirline names 6 Processing options 7 fruncation limits 8 Time switch  D. Airfield Physical Characteristics 9 Mirliald network 10 Mumber of runways 11 Runway identification 12 Departure runway and links 13 Manuay crossing links 14 Exit taxiway location 15 Mirline gatas 16 Mirline gatas 17 General swistion basing areas  18 Aircraft separations 19 New route data (Exhibits 8K and 8B) 10 New-way path data 11 Common approach paths 12 Vectoring delays 13 Departure runway quous control 14 Gate held control 15 Separture cunway quous control 16 General swistions 17 Runway crossing delay control 18 Aircraft Operational Characteristics 19 Aircraft Operational Characteristics 10 Touch-and-go runway occupancy times 11 Departure sunway occupancy times 12 Taxi speeds 13 Airspace travel times 14 Gate service times 15 Airspace travel times 16 Airspace travel times 17 Airspace travel times 18 Airspace travel times 19 New crossing clearance times (Table 13) 17 Lateness distribution	3 Start and finish times	
6 Processing options 7 Truncation limits 8 Time switch  b. Nirfield Physical Characteristics 9 Airfield Instruct Extension of parallel runways (Exhibit 5) 10 Number of runway 11 Runway identification 12 Departure runway and links Taxiway "P" for 30R and Taxiway "A" for 30L 11 Runway identification 12 Departure runway and links Additional crossing links (Table 13) 14 Exit taxiway location New runway exit distances (Table 10) 15 Bolding areas 16 Airline gates 17 General aviation basing areas 18 Aircraft separations 19 Route data New route data (Exhibits SN and SB) 20 Two-way path data 21 Common approach paths 22 Vectoring dalays 23 Departure runway queue control 24 Gate hold control 25 Departure surpages constraints 26 Departure runway queue 27 Runway crossing dalay control  d. Aircraft Operational Characteristics 28 Init taxiway utilization New runway arrival occupancy times (Table 12) 29 Arrival runway occupancy times 20 Touch-sad-spor runway occupancy times 21 Departure runway occupancy times 22 Taxi speeds 33 Approach speeds 34 Cate service times 35 Airspace travel times 36 Airspace travel times 37 Airspace distribution 38 New crossing Clearance times (Table 13) 39 Letanses distribution	4 Print options	
7 Truncation limits 8 Time switch  2. Airfield Physical Characteristics 9 Mirfield network Extension of parallel runways (Exhibit 5) 10 Number of runways 11 Runway identification 12 Departure runway and links Taxiway "P" for 30R and Taxiway "A" for 30L 13 Runway crossing links Additional crossing links (Table 13) 14 Exit taxiway location New runway exit distances (Table 10) 15 Bolding areas 16 Mirline gates 17 General swistion basing areas  18 Aircraft separations 19 Route data New route data (Exhibits 8% and 8B) 20 Pro-way path data 21 Common approach paths 22 Vactoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure runway queue control 26 Aircraft Operational Characteristics 27 Runway crossing delay control 28 Aircraft Operational Characteristics 29 Exit taxiway utilization New runway arrival occupancy times (Table 12) 20 Touch-and-go runway occupancy times 21 Departure runway occupancy times 22 Taxi speeds 23 Airspace travel times 24 Approach speeds 25 Airspace travel times 26 Airspace travel times 27 Airspace travel times 28 Airspace travel times 29 Airspace travel times 20 Airspace travel times 20 Airspace travel times 21 Taxi speeds 22 New crossing clearance times (Table 13) 23 Airspace travel times 24 Airspace travel times 25 Airspace travel times 26 Airspace travel times 27 Airspace travel times 28 New crossing clearance times (Table 13)	5 Airline names	
7 Truncation limits 8 Time switch  2. Airfield Physical Characteristics 9 Airfield network Extension of parallel runways (Exhibit 5) 10 Number of runways 11 Runway identification 12 Departure runway and links Taxiway "P" for 30R and Taxiway "A" for 30L 13 Runway crossing links Additional crossing links (Table 13) 14 Exit taxiway location New runway exit distances (Table 10) 15 Bolding areas 16 Airline gates 17 General swistion basing areas  18 Aircraft separations 19 Route data New route data (Exhibits 8R and 8B) 20 Pro-way path data 21 Common approach paths 22 Vactoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure runway queue control 26 Aircraft Operational Characteristics 27 Runway crossing delay control 28 Aircraft Operational Characteristics 29 Exit taxiway utilization New runway arrival occupancy times (Table 12) 20 Touch-and-go runway occupancy times 21 Departure runway occupancy times 22 Taxi speeds 23 Airspace travel times 24 Approach speeds 25 Airspace travel times 26 Airspace travel times 27 Airspace travel times 28 Airspace travel times 29 Airspace travel times 20 Airspace travel times 20 Airspace travel times 21 Airspace travel times 22 New crossing clearance times (Table 13) 23 Airspace travel times 24 Airspace travel times 25 Airspace travel times 26 Airspace travel times 27 Airspace travel times 28 New crossing clearance times (Table 13)	6 Processing options	
B. Airfield Physical Characteristics  3 Airfield Physical Characteristics  10 Number of runways  11 Numway identification  12 Departure runway and links  13 Additional crossing links (Table 13)  14 Exit taxiway location  15 Bolding areas  16 Airfield Section (Table 10)  15 Bolding areas  16 Airfield Physical Characteristics  17 General aviation basing areas  18 Aircraft separations  19 Soute data (Exhibits 8A and 8B)  20 Pow-way path data  21 Common approach paths  22 Vectoring delays  23 Departure runway queue control  24 Cate hold control  25 Departure airspace constraints  26 Departure curvey delay control  27 Runway crossing delay control  28 Aircraft Coerational Characteristics  29 Exit teasivey utilization (New runway arrival occupancy times (Table 12)  30 Touch-and-go runway occupancy times  11 Departure turway occupancy times  12 Taxi speeds  13 Approach speeds  14 Gate service times  15 Airspace travel times  16 Airspace travel times  17 Airspace travel times  18 Airspace travel times  19 Airspace travel times  10 Airspace travel times  10 New crossing clearance times (Table 13)  10 Teateness distribution		
b. Airfield Physical Characteristics  3 Airfield network 10 Number of runways 11 Runway Idantification 12 Departure runway and links 13 Airfield network 14 Exit taxiway Idantification 15 Politing areas 16 Airfine gates 17 General eviation basing areas 18 Aircraft separations 19 New route data (Exhibits 6A and 8B) 20 Two-way path data 21 Common approach paths 22 Vectoring dalays 23 Departure runway quous control 24 Gate hold control 25 Departure airpace constraints 26 Departure airpace constraints 27 Runway crossing dalay control 28 Aircraft Operational Characteristics 29 Aircraft Operational Characteristics 20 Two-way path data 21 Departure airpace constraints 22 Departure airpace constraints 23 Departure airpace constraints 24 Departure airpace constraints 25 Departure airpace constraints 26 Departure runway occupancy times 27 Runway crossing dalay control 28 Aircraft Operational Characteristics 29 Aircraft Operational Characteristics 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 31 Departure runway occupancy times 31 Departure runway occupancy times 31 Aircraft Operational Characteristics 32 Aircraft Operational Characteristics 33 Aircraft Operational Characteristics 34 Aircraft Operational Characteristics 35 Aircraft Operational Characteristics 36 Aircraft Operational Characteristics 37 Aircraft Operational Characteristics 38 New Younway arrival occupancy times (Table 12) 39 Approach speeds 30 New taxi speeds (Exhibit 8C) 30 Approach speeds 31 Aircraft Operations 32 Aircraft Operations 33 Aircraft Operations 34 Aircraft Operations 35 Aircraft Operations 36 Aunway occupancy times 37 Aircraft Operations 38 Aircraft Operations 39 Aircraft Operations 30 Touch-and-go runway occupancy times 31 Aircraft Operations 31 Aircraft Operations 32 Aircraft Operations 33 Aircraft Operations 34 Aircraft Operations 35 Aircraft Operations 36 Aunway occupancy times 37 Aircraft Operations 38 Aircraft Operations 39 Aircraft Operations 30 Aircraft Operations 30 Aircraft Operations 31 Aircraft Operation		
9 Airfield network 10 Number of runwaye 11 Runway identification 12 Departure runway and links 13 Aircraft Command and areas 14 Aircraft Command and areas 15 Aircraft Command and areas 16 Aircraft Command and areas 17 General aviation 18 Departure runway path data 19 Route data 10 New route data (Exhibits SK and SB) 11 Common approach paths 12 Vectoring delays 13 Departure runway queue control 14 Cate hold control 15 Departure runway queue control 16 Separture runway occupancy times 17 Runway crossing dalay control 18 Stat taxiway utilization 19 New exit taxiway utilization (Table 11) 19 Arrival runway occupancy times 10 Touch-and-go runway occupancy times 11 Departure runway occupancy times 12 Taxi speeds 13 Approach speeds 14 Gate service times 15 Airspace travel times 16 Aumay crossing times 17 Aumay crossing times 18 New crossing clearance times (Table 13) 19 Approach speeds 10 Airspace travel times 10 Aumay crossing times 10 New crossing clearance times (Table 13) 10 Approach speeds 11 Airspace travel times 12 Aumay crossing times 13 New crossing clearance times (Table 13)		
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10 Number of runways  11 Runway identification  12 Ceparture runway and links  13 Runway crossing links  14 Exit taxiway location  15 Solding areas  16 Airline gates  17 General aviation basing areas  18 Aircraft separations  19 Route data  10 Thorway path data  11 Ceparture runway queue control  12 Ceparture airspace constraints  13 Departure airspace constraints  14 Cate hold control  15 Departure queue  17 Runway crossing delay control  4 Aircraft coerational Characteristics  18 Aircraft coerational Characteristics  19 Runway crossing delay control  10 Touch-and-go runway occupancy times  11 Ceparture runway occupancy times  12 Ceparture runway occupancy times  13 Departure runway occupancy times  14 Cate service runway occupancy times  15 Departure runway occupancy times  16 Ceparture runway occupancy times  17 Runway crossing delay control  18 Aircraft coerational Characteristics  19 Aircraft coerational Characteristics  10 Touch-and-go runway occupancy times  11 Ceparture runway occupancy times  12 Taxi speeds  13 Aircraft coerational Characteristics  14 Cate service times  15 Airspace trunway occupancy times  16 Airspace trunway occupancy times  17 Airspace trunway occupancy times  18 Airspace trunway occupancy times  19 Airspace trunway occupancy times  10 Approach speeds  11 Aurspace trunway occupancy times  12 Taxi speeds  13 Airspace trunway occupancy times  14 Cate service times  15 Airspace trunway occupancy times  16 Aircraft coerational characteristics  17 Aurspace trunway occupancy times  18 New Crossing clearance times (Table 13)		Principle of special and special (Principle C)
11 Runway identification 12 Departure runway and links 13 Additional crossing links (Table 13) 14 Exit taxiway location 15 Solding areas 16 Airline gates 17 Ceneral aviation basing areas 18 Aircraft separations 19 Route data (Exhibits 8A and 8B) 20 Two-way path data 21 Common approach paths 21 Vectoring delays 22 Vectoring delays 23 Departure runway queue control 24 Cate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Common approach paths 21 Sexit taxiway utilization New exit taxiway utilization (Table 11) 23 Arrival runway occupancy times 31 Departure runway occupancy times 32 Arrival runway occupancy times 31 Departure runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times 35 Airspace traines 36 Alarpace traines 37 Airspace traines 38 Alarpace traines 39 Airspace traines 31 Airspace traines 32 Aumay crossing times 33 New crossing clearance times (Table 13)		Extension or parallel runways (Exhibit 5)
12 Departure runway and links 13 Runway crossing links 14 Exit taxiway Location 15 Bolding areas 16 Airtine gates 17 General eviation basing areas  18 Aircraft separations 19 Route data 11 Common approach paths 12 Vectoring delays 13 Departure airspace constraints 14 Gate hold control 15 Peparture quaue 17 Runway crossing delay control 18 Aircraft Operational Characteristics 19 Arrival runway occupancy times 10 Touch-and-go runway occupancy times 11 Separture runway occupancy times 11 Separture runway occupancy times 12 Taxi speeds 13 Approach speeds 14 Gate service times 15 Aircraft speeds 16 Runway crossing times 17 Lateness distribution 18 New crossing clearance times (Table 13)	the second se	
13 Numery crossing links Additional crossing links (Table 13)  14 Exit taxiway location New runway exit distances (Table 10)  15 Solding areas  16 Airline gates  17 General aviation basing areas  2. ACC Procedures  18 Aircraft separations  19 Route data New route data (Exhibits SR and SB)  20 Two-way path data  21 Common approach paths  22 Vectoring delays  23 Departure runway queue control  24 Gate hold control  25 Departure airspace constraints  26 Departure quaue  27 Runway crossing delay control  4. Aircraft Operational Characteristics  28 Exit taxiway utilization New exit taxiway utilization (Table 11)  29 Arrival runway occupancy times  10 Touch-and-go runway occupancy times  11 Departure runway occupancy times  12 Taxi speeds  13 Approach speeds  14 Gate service times  15 Airspace travel times  16 Runway crossing times  New crossing clearance times (Table 13)  17 Lateness distribution		
14 Exit taxiway location New runway exit distances (Table 10)  15 Bolding areas  16 Airline gates  17 General aviation basing areas  20 Teneral aviation basing areas  18 Aircraft separations  19 Route data New route data (Exhibits 8A and 8B)  20 Teneral path data  21 Common approach paths  22 Vactoring dalays  23 Departure runway queue control  24 Gate hold control  25 Departure airspace constraints  26 Departure queue  27 Runway crossing delay control  4. Aircraft Operational Characteristics  28 Exit taxiway utilization New runway arrival occupancy times New runway arrival occupancy times (Table 12)  10 Touch-and-go runway occupancy times  11 Departure runway occupancy times  12 Taxi speeds  13 Approach speeds  14 Gate service times  15 Airspace travel times  16 Runway crossing times  New crossing clearance times (Table 13)  17 Lateness distribution		
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16 Airline gates 17 General aviation basing areas  18 Aircraft separations 19 Route data New route data (Exhibits SA and SB) 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate held control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  4. Aircraft Coerational Characteristics 28 Exit taxiway utilization New exit taxiway utilization (Table 11) 29 Arrival runway occupancy times New runway arrival occupancy times (Table 12) 10 Touch-and-go runway occupancy times 11 Departure runway occupancy times 12 Taxi speeds New taxi speeds (Exhibit SC) 13 Approach speeds 14 Gate service times 15 Airspace traval times 16 Sunway crossing times 17 Lazeness distribution		New runway exit distances (Table 10)
C. ATC Procedures  18 Aircraft separations  19 Route data New route data (Exhibits SA and SB)  20 Two-way path data  21 Common approach paths  22 Vectoring delays  23 Departure runway queue control  24 Gate hold control  25 Departure airspace constraints  26 Departure queue  27 Runway crossing delay control  4. Aircraft Operational Characteristics  28 Exit taxiway utilization New exit taxiway utilization (Table 11)  29 Arrival runway occupancy times New runway arrival occupancy times (Table 12)  10 Touch-and-go runway occupancy times  11 Departure runway occupancy times  12 Taxi speeds New taxi speeds (Exhibit SC)  13 Approach speeds  14 Gate service times  15 Airspace travel times  16 Runway crossing times  New crossing clearance times (Table 13)  17 Lateness distribution	15 Holding areas	
18 Aircraft separations  19 Routa data  10 Two-way path data  11 Common approach paths  12 Vectoring dalays  13 Departure runway queue control  24 Cate hold control  25 Departure airspace constraints  26 Departure queue  27 Runway crossing dalay control  4. Aircraft Operational Characteristics  28 Exit taxiway utilization New exit taxiway utilization (Table 11)  29 Arrival runway occupancy times New runway arrival occupancy times (Table 12)  10 Touch-ead-go runway occupancy times  11 Departure runway occupancy times  12 Taxi speeds  13 Approach speeds  14 Gate service times  15 Airspace travel times  16 Runway crossing times  New crossing clearance times (Table 13)  17 Lateness distribution		
18 Aircraft separations  19 Route data New route data (Exhibits 8A and 8B)  20 Two-way path data  21 Common approach paths  22 Vectoring delays  23 Departure runway queue control  24 Gate hold control  25 Departure airspace constraints  26 Departure queue  27 Runway crossing delay control  4. Aircraft Operational Characteristics  28 Exit taxiway utilization New exit taxiway utilization (Table 11)  29 Arrival runway occupancy times New runway arrival occupancy times (Table 12)  10 Touch-and-go runway occupancy times  11 Departure runway occupancy times  12 Taxi speeds New taxi speeds (Exhibit 8C)  13 Approach speeds  14 Gate service times  15 Airspace travel times  16 Sunway crossing times New crossing clearance times (Table 13)  17 Lateness distribution	17 General aviation basing areas	
18 Aircraft separations  19 Route data New route data (Exhibits 8A and 8B)  20 Two-way path data  21 Common approach paths  22 Vectoring delays  23 Departure runway queue control  24 Gate hold control  25 Departure airspace constraints  26 Departure queue  27 Runway crossing delay control  4. Aircraft Operational Characteristics  28 Exit taxiway utilization New exit taxiway utilization (Table 11)  29 Arrival runway occupancy times New runway arrival occupancy times (Table 12)  10 Touch-and-go runway occupancy times  11 Departure runway occupancy times  12 Taxi speeds New taxi speeds (Exhibit 8C)  13 Approach speeds  14 Gate service times  15 Airspace travel times  16 Sunway crossing times New crossing clearance times (Table 13)  17 Lateness distribution		
New route data (Exhibits 8A and 8B)  10 Two-way path data  11 Common approach paths  12 Vectoring delays  13 Departure runway queue control  14 Gate hold control  15 Departure airspace constraints  16 Departure queue  17 Runway crossing delay control  4. Aircraft Operational Characteristics  18 Exit taxiway utilization  10 Touch-and-go runway occupancy times  11 Departure runway occupancy times  12 Taxi speeds  13 Approach speeds  14 Gate service times  15 Airspace travel times  16 Sunway crossing times  New crossing clearance times (Table 13)  New crossing clearance times (Table 13)	c. ATC Procedures	
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New runway arrival occupancy times (Table 12)  Touch-end-go runway occupancy times  Touch-end-go runway occupancy times  Taxi speeds (Exhibit 8C)  Approach speeds  Gate service times  Airspace travel times  New crossing clearance times (Table 13)  Taxi speeds (Exhibit 8C)	d. Aircraft Operational Characteristics	
10 Touch-and-go runway occupancy times  11 Departure runway occupancy times  12 Taxi speeds  New taxi speeds (Exhibit 8C)  13 Approach speeds  14 Gate service times  15 Airspace travel times  16 Runway crossing times  New crossing clearance times (Table 13)  17 Lateness distribution	28 Exit taxiway utilization	New exit taxiway utilization (Table 11)
10 Touch-and-go runway occupancy times  11 Departure runway occupancy times  12 Taxi speeds  New taxi speeds (Exhibit 8C)  13 Approach speeds  14 Gate service times  15 Airspace travel times  16 Runway crossing times  New crossing clearance times (Table 13)  17 Lateness distribution	29 Arrival runway occupancy times	
New taxi speeds (Exhibit 8C)  33 Approach speeds  34 Gate service times  35 Airspace travel times  36 Runway crossing times  New crossing clearance times (Table 13)  37 Lateness distribution	10 Touch-end-go runway occupancy times	
13 Approach speeds  34 Gate service times  15 Airspace travel times  16 Runway crossing times  New crossing clearance times (Table 13)  17 Lateness distribution	31 Separture cunway occupancy times	
13 Approach speeds 34 Gate service times 15 Airspace travel times 16 Runway crossing times New crossing clearance times (Table 13) 17 Lateness distribution	32 Taxi speeds	New taxi speeds (Exhibit 8C)
15 Airspace travel times 16 Runway crossing times 17 Lateness distribution 18 New crossing clearance times (Table 13)	33 Approach speeds	
New crossing clearance times (Table 13)  17 Lateness distribution	34 Gate service times	
New crossing clearance times (Table 13)  17 Lateness distribution	35 Airspace travel times	
17 Lateness distribution		New crossing clearance times (Table 13)
38 Semand 1985 VFR demand and mix (Table 16)		
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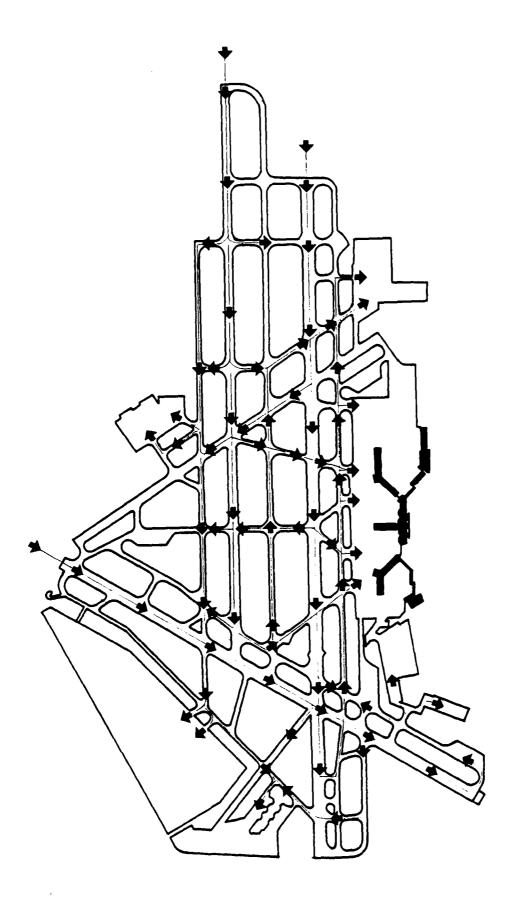


Exhibit 8A

Lambert—St. Louis International Airport

AIRFIELD DEVELOPMENT CONFIGURATION
FLOW DIAGRAM

ARRIVALS ON RUNWAYS 30R, 30L, AND 24

Peat, Marwick, Mitchell & Co. June 1980

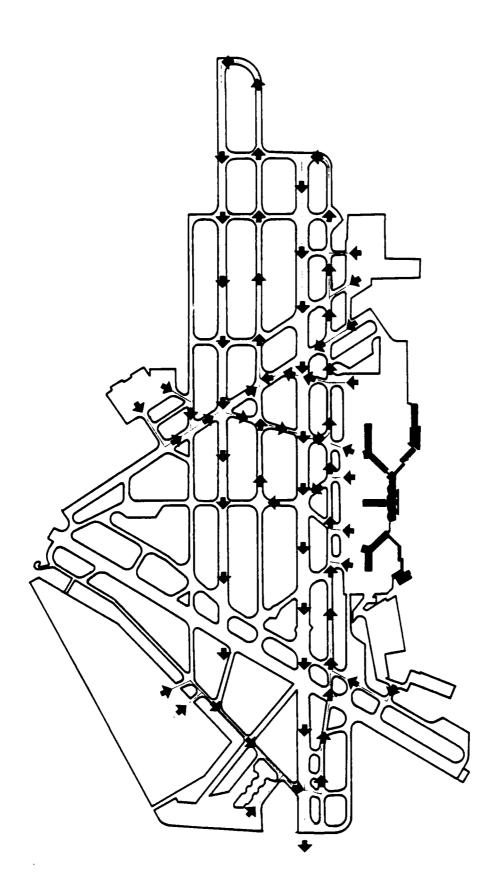


Exhibit 8B

Lambert—St. Louis International Airport

## AIRFIELD DEVELOPMENT CONFIGURATION FLOW DIAGRAM DEPARTURES ON RUNWAYS 30R AND 30L

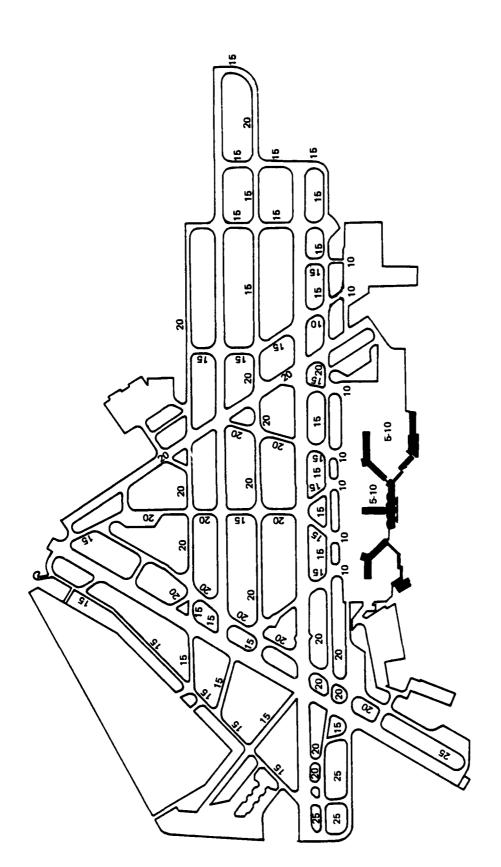


Exhibit 8C

Lambert—St. Louis International Airport

GENERALIZED TAXIWAY SPEEDS (MPH) FOR ARRIVALS ON RUNWAYS 30R, 30L AND 24, AND DEPARTURES ON RUNWAYS 30R AND 30L

June 1980 Peat, Marwick, Mitchell & Co.

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4. Logistics	
1 Title	Lambert-St. Louis International Airport-Exp. 39
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
	· · · · · · · · · · · · · · · · · · ·
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
ll Runway identification	
12 Departure runway end links	
13 Runway crossing Links	
	· · · · · · · · · · · · · · · · · · ·
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	IFR1 separations (Table 4)
19 Route data	
20 Two-way path data	
21 Common approach paths	All common approach noth lengths are C nouticel = 1
22 Vectoring delays	All common approach path lengths are 6 nautical mil
23 Departure runway queue control	
24 Gata hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
1. Aircraft Operational Characteristics	
19 Exit taxivey utilization	
13 Affirel Finway occupancy times	
" "such-end-to runway occupancy times	
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14. 190013	
1 0 1 P 004 8	
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	The Grant Tarle let

Experiment Number: 40 (Input changes from experiment number 33)

SIM	JLATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logi:	stics	
	Title	Lambert-St. Louis International Airport-Exp. 40
	Random number seeds	Lambert-St. Louis International Airborr-Exp. 40
	Start and finish times	
	Print options	
	Airline names	
	Processing options	
	Truncation limits	
	Time switch	<u></u>
	ield Physical Characteristics	
	Airfield network	
	Number of runways	Extension of parallel runways (Exhibit 5)
	Runway identification	
	Departure runway and links	
ນ	Runway crossing links	
14	Exit taxiway location	New runway exit distances (Table 10)
15	Holding areas	
16	Airline gates	
17	General aviation basing areas	
c. ATC	Procedures	
18	Aircraft separations	IFR1 separations (Table 4)
19	Route data	New route data (Exhibits 9A and 9B)
20	Two-way path data	
21	Common approach paths	
22	Vectoring delays	
	Ceparture runway queue control	
	Gate hold control	
	Departure airspace constraints	
	Departure queue	
	Runway crossing delay control	
	mental crosseril carel courter	
d Aire	craft Operational Characteristics	
_==	Exit taxiway utilization	
		New exit taxiway utilization (Table 11)
	Arrival runway occupancy times	New runway arrival occupancy times (Table 12)
10		
<del></del>	Touch-end-go runway occupancy times	
31	Departure runway occupancy times	
31 32	Ceparture runway occupancy times Taxi speeds	New taxi speeds (Exhibit 9C)
31 32 33	Ceparture runway occupancy times Taxi speeds Approach speeds	New taxi speeds (Exhibit 9C)
31 32 33	Ceparture runway occupancy times Taxi speeds Approach speeds Gate service times	New taxi speeds (Exhibit 9C)
31 32 33 34 35	Ceparture runway occupancy times Taxi speeds Approach speeds Gate service times Airspace travel times	New taxi speeds (Exhibit 9C)
31 32 33 34 35	Ceparture runway occupancy times Taxi speeds Approach speeds Gate service times Airspace travel times Runway crossing times	New taxi speeds (Exhibit 9C)
31 32 33 34 35 36	Ceparture runway occupancy times Taxi speeds Approach speeds Gate service times Airspace travel times	New taxi speeds (Exhibit 9C)

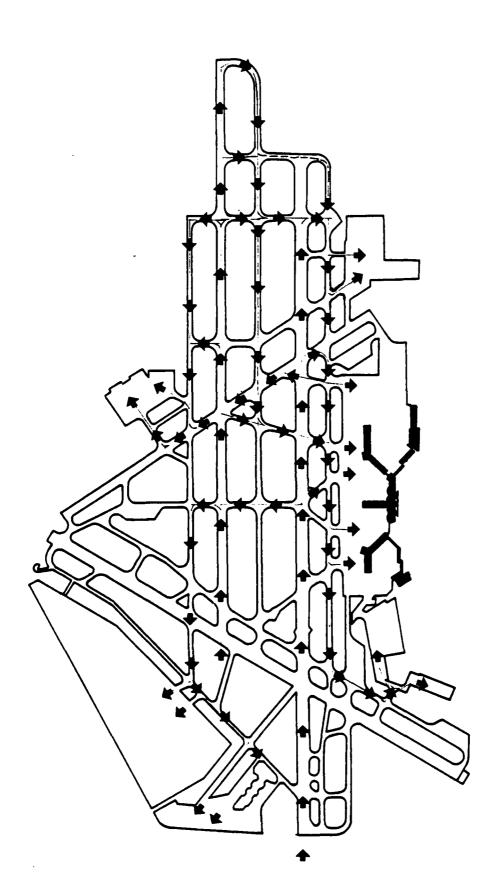


Exhibit 9A
Louis International Airport

Lambert—St. Louis International Airport
AIRFIELD DEVELOPMENT CONFIGURATION
FLOW DIAGRAM
ARRIVALS ON RUNWAYS 12R AND 12L

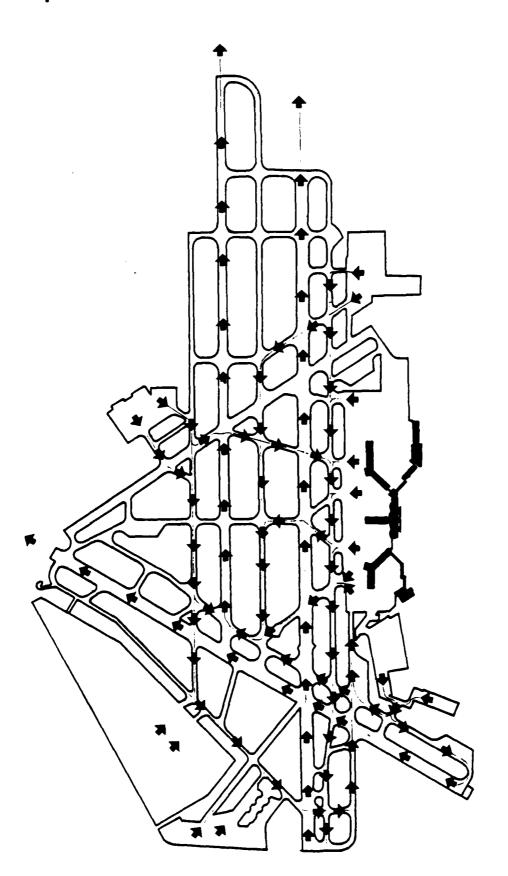
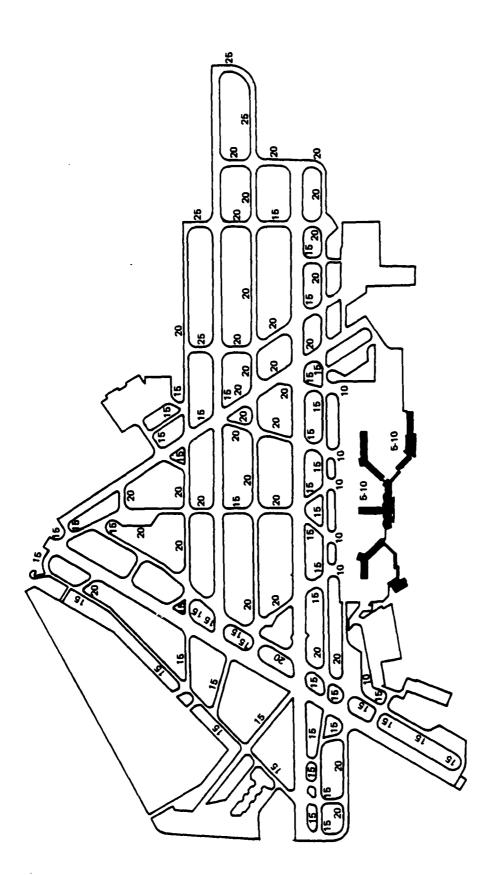


Exhibit 9B

Lambert—St. Louis International Airport

AIRFIELD DEVELOPMENT CONFIGURATION FLOW DIAGRAM DEPARTURES ON RUNWAYS 12R, 12L, AND 6

June 1980 Peat, Marwick, Mitchell & Co.



Lambert—St. Louis International Airport
GENERALIZED TAXIWAY SPEEDS (MPH) FOR
ARRIVALS ON RUNWAYS 12R AND 12L
AND DEPARTURES ON RUNWAYS 12R, 12L AND 6

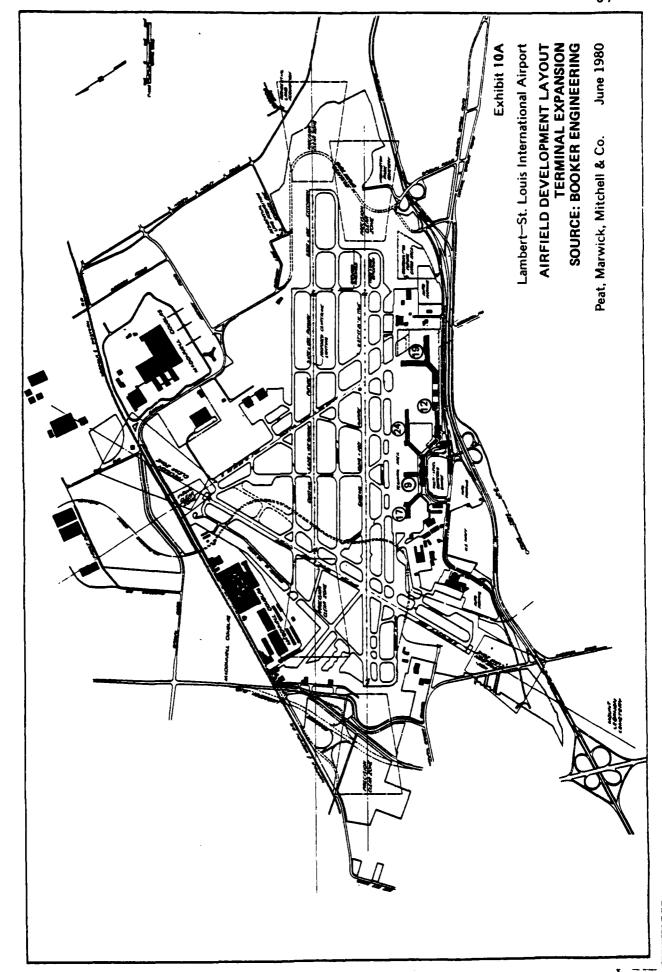
Exhibit 9C

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4. <u>Logistics</u>	
l Title	Lambert-St. Louis International Airport-Exp. 41
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
% Time switch	
b. Airfield Physical Characteristics	,
9 Airfield network	
10 Number of runways	
ll Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxivey location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
<u></u>	
g. ATC Procedures	
18 Aircraft separations	IFRI separations (Table 4) - Independent arrivals on parallel runways
19 Route data	on parallel runways
19 Route data 20 Two-way path data	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times	Try separations (Table 4) - Independent arrivals
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds	Try separations (Table 4) - Independent arrivals  on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times	on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times 35 Airspace travel times	Irri separations (Table 4) - Independent arrivals on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times 35 Airspace travel times 36 Runway crossing times	on parallel runways

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logistics	
l Title	Lambert-St. Louis International Airport-Exp. 42
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
% Time switch	
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
- 16 Airline gates	
17 General aviation basing areas	
g. ATC Procedures	
	TERRIT CAMPARTANC PURITY ALL THOMPSHOOM TO ANALYSIS
18 Aircraft separations	IFRI separations (Table 4) - Independent arrivals on parallel runways
19 Route data	IFRI separations (Table 4) - Independent arrivals on parallel runways
19 Route data 20 Two-way path data	IFRI separations (Table 4) - Independent arrivals on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths	IFRI separations (Table 4) - Independent arrivals on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays	IFRI separations (Table 4) - Independent arrivals On parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control	IFRI separations (Table 4) - Independent arrivals on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control	IFRI separations (Table 4) - Independent arrivals On parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure sirspace constraints	IFRI separations (Table 4) - Independent arrivals On parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Ceparture airspace constraints 26 Departure queue	IFRI separations (Table 4) - Independent arrivals On parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure sirspace constraints	IFRI separations (Table 4) - Independent arrivals On parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Ceparture airspace constraints 26 Departure queue 27 Runway crossing delay control	IFRI separations (Table 4) - Independent arrivals On parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control 4. Aircraft Operational Characteristics	IFRI separations (Table 4) - Independent arrivals On parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Ceparture airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization	IFRI separations (Table 4) - Independent arrivals On parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Ceparture airspace constraints 26 Departure queue 27 Runway crossing delay control  4. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times	IFRI separations (Table 4) - Independent arrivals on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Ceparture airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization	IFRI separations (Table 4) - Independent arrivals On parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times	IFRI separations (Table 4) - Independent arrivals On parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Ceparture airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times	IFRI Separations (Table 4) - Independent arrivals On parallel runways
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19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds	Irgi separations (Table 4) - Independent arrivals On parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Ceparture airspace constraints 26 Departure queue 27 Runway crossing delay control  4. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times	Irki separations (Table 4) - Independent arrivals on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  d. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times 35 Airspace travel times	1FRI separations (Table 4) - Independent arrivals on parallel runways
19 Route data 20 Two-way path data 21 Common approach paths 22 Vectoring delays 23 Departure runway queue control 24 Gate hold control 25 Departure airspace constraints 26 Departure queue 27 Runway crossing delay control  4. Aircraft Operational Characteristics 28 Exit taxiway utilization 29 Arrival runway occupancy times 30 Touch-and-go runway occupancy times 31 Departure runway occupancy times 32 Taxi speeds 33 Approach speeds 34 Gate service times 35 Airspace travel times 36 Runway crossing times	Irri separations (Table 4) - Independent arrivals on parallel runways

	SIM	ILATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4.	Logi	stics	
	1	Title	Lambert-St. Louis International Airport-Exp. 43
	2	Random number seeds	
	3	Start and finish times	
	4	Frint options	
	5	Airline names	
	6	Processing options	
	7	Truncation limits	
	1	Time switch	
þ.	Mrt	ield Physical Characteristics	
	9	Airfield network	
	10	Number of runways	
	11	Annway identification	
	13.	Departure runway and links	
	11	Runway crossing links	
	14	Exit taxiway location	
	15	Holding areas	
•	16	Airline gates	
	17	General aviation basing areas	
<u>e.</u>	YLC	Procedures	
<u> </u>	18	Aircraft separations	IFRI separations (Table 4) - independent arrivals on parallel runways
	19	Route data	on parallel runways
	19 20	Route data Two-way path data	iffi separations (Table 4) - independent arrivals on parallel runways
	19 20 21	Route data Two-way path data Common approach paths	on parallel runways
	19 20 21 22	Noute data Two-way path data Common approach paths Vectoring delays	on parallel runways
	19 20 21 22 23	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control	on parallel runways
	19 20 21 22 23 24	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate held centrol	on parallel runways
	19 20 21 22 23 24 25	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold control Departure airspace constraints	iffi separations (Table 4) - independent arrivals on parallel runways
	19 20 21 22 23 24 25 25	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold control Departure airspace constraints Departure queue	iffi separations (Table 4) - independent arrivals on parallel runways
	19 20 21 22 23 24 25 25	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold control Departure airspace constraints	on parallel runways
d	19 20 21 22 23 24 25 26 27	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold control Departure airspace constraints Departure queue Runway crossing delay control	iffi separations (Table 4) - independent arrivals on parallel runways
4.	19 20 21 22 23 24 25 25 27	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate held control Departure airspace constraints Departure queue Runway crossing delay control Traft Operational Characteristics	iffi separations (Table 4) - independent arrivals on parallel runways
4.	19 20 21 22 23 24 25 26 27	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold centrol Departure airspace constraints Departure queue Runway crossing delay control Traft Operational Characteristics Exit taxiway utilization	iffi separations (Table 4) - independent arrivals on parallel runways
<u>d.</u>	19 20 21 22 23 24 25 25 27  Airc 28 29	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold control Departure airspace constraints Departure queue Runway crossing delay control Traft Operational Characteristics Exit taxiway utilization Arrival runway occupancy times	IFRI separations (Table 4) - independent arrivals on parallel runways
4.	19 20 21 22 23 24 25 25 27  Airc 28 29	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold control Departure airspace constraints Departure queue Runway crossing delay control Traft Operational Characteristics Exit taxiway utilization Arrival runway occupancy times Touch-and-go runway occupancy times	IFRI separations (Table 4) - independent arrivals on parallel runways
<u>d.</u>	19 20 21 22 23 24 25 26 27  Airc 28 29 30 31	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold centrol Departure airspace constraints Departure queue Runway crossing delay control Traft Operational Characteristics Exit taxiway utilization Arrival runway occupancy times Touch-and-go runway occupancy times	IFRI separations (Table 4) - independent arrivals on parallel runways
4.	19 20 21 22 23 24 25 25 27  Airc 28 29 30 31 32	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold control Departure airspace constraints Departure queue Runway crossing delay control  resft Operational Characteristics Exit taxiway utilization Arrival runway occupancy times Touch-and-go runway occupancy times Departure runway occupancy times	TFRI separations (Table 4) - independent arrivals on parallel runways
4.	19 20 21 22 23 24 25 28 27  Airc 28 29 30 31 32 33	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold control Departure airspace constraints Departure queue Runway crossing delay control  raft Operational Characteristics Exit taxiway utilization Arrival runway occupancy times Touch-and-go runway occupancy times Departure runway occupancy times Taxi speeds	IFRI separations (Table 4) - independent arrivals on parallel runways
<u>d.</u>	19 20 21 22 23 24 25 26 27  Airc 28 29 30 31 32 33 34	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold centrol Departure airspace constraints Departure queue Runway crossing delay control  traft Operational Characteristics Exit taxiway utilization Arrival runway occupancy times Touch-and-go runway occupancy times Ceparture runway occupancy times Taxi speeds Approach speeds	IFRI separations (Table 4) - independent arrivals on parallel runways
<u>d.</u>	19 20 21 22 23 24 25 26 27  Airc 28 29 30 31 32 33 34 35	Noute data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold control Departure airspace constraints Departure queue Runway crossing delay control  Traft Operational Characteristics Exit taxiway utilization Arrival runway occupancy times Touch-and-go runway occupancy times Departure runway occupancy times Taxi speeds Approach speeds Gate service times	IFRI separations (Table 4) - independent arrivals on parallel runways
4.	19 20 21 22 23 24 25 26 27  Airc 28 29 30 31 32 33 34 35	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold centrol Departure airspace constraints Departure queue Runway crossing delay control  Traft Operational Characteristics Exit taxiway utilization Arrival runway occupancy times Touch-and-go runway occupancy times Departure runway occupancy times Taxi speeds Approach speeds Gate service times Airspace travel times Runway crossing times	IFRI separations (Table 4) - independent arrivals on parallel runways
4.	19 20 21 22 23 24 25 28 27  Airc 28 29 30 31 32 33 34 35	Route data Two-way path data Common approach paths Vectoring delays Departure runway queue control Gate hold control Departure airspace constraints Departure queue Runway crossing delay control  Traft Operational Characteristics Exit taxiway utilization Arrival runway occupancy times Touch-and-go runway occupancy times Departure runway occupancy times Taxi speeds Approach speeds Gate service times Airspace travel times Runway crossing times Lateness distribution	IFRI separations (Table 4) - independent arrivals on parallel runways

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logistics	
1 Title	Lambert-St. Louis International Airport-Exp. 44
2 Random number seeds	2000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 Start and finish times	
4 Print options	
3 Airline names	
6 Processing options	
7 Truncation limits	
* Time switch	
b. Airfield Physical Characteristics	,
9 Airfield network	Includes the expanded terminal (Exhibit 10A)
10 Number of runways	
ll Runway identification	
12. Departure runway and links	
11 Runway crossing links	
14 Exit taxivay location	
15 Holding areas	
· 16 Airline gates	Increased number of gates (Exhibit 10A)
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	New route data (Exhibits 10B and 10C)
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	·
24 Gate held control	
25 Departure airspace constraints	
26 Departure queue 27 Runway crossing delay control	
27 Runway crossing delay control	<u> </u>
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
30 Touch-end-go runway occupancy times	
31 Departure runway occupancy times	
32 Taxi speeds	
33 Approach speeds	
14 Gate service times	
15 Airspace travel times	
16 Runway crossing times	
17 Lataness distribution	
38 Demand	
·	



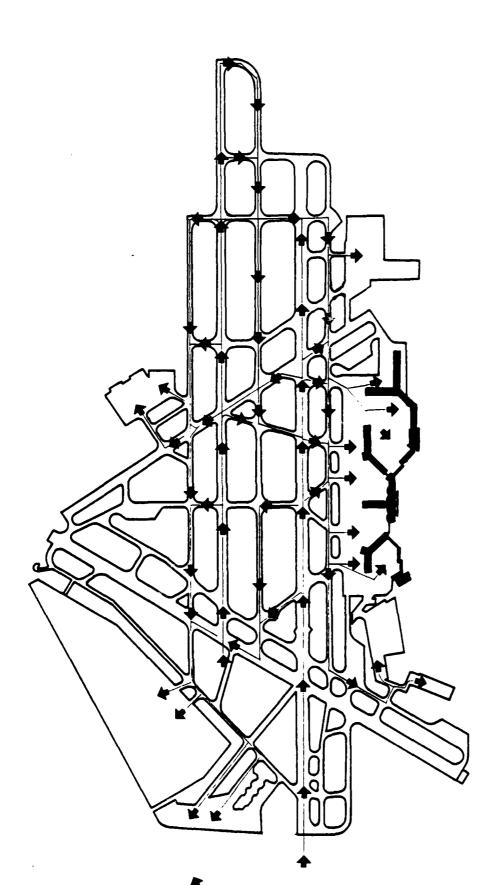


Exhibit 10B

Lambert—St. Louis International Airport

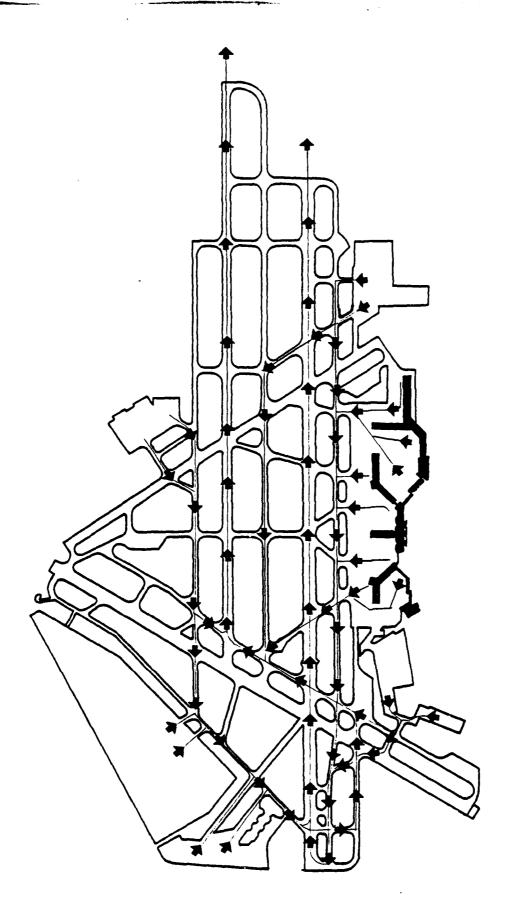
AIRFIELD DEVELOPMENT CONFIGURATION

TERMINAL EXPANSION

FLOW DIAGRAM

ARRIVALS ON RUNWAYS 12R AND 12L

Peat, Marwick, Mitchell & Co. June 1980



Lambert—St. Louis International Airport
AIRFIELD DEVELOPMENT CONFIGURATION
TERMINAL EXPANSION
FLOW DIAGRAM
DEPARTURES ON RUNWAYS 12R AND 12L
Peat, Marwick, Mitchell & Co. June 1980

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4. <u>Logistics</u>	
1 Title	Lambert-St. Louis International Airport-Exp. 35A
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
27	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	·
24 Gats hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
10 Touch-and-go runway occupancy times	
31 Ceparture runway occupancy times	
J2 Taxi Speeds	<u> </u>
33 Approach speeds	
34 Gate service times	
35 Airspace travel times	
36 Runway crossing times	
. 37 Lateness distribution	
38 Demand	1985 VFR demand-increase heavy aircraft operations
	(Table 16)
	<u> </u>

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
A. Logistics	
1 Title	Lambert-St. Louis International Airport-Exp. 35B
2 Random number seeds	Lambert-St. Louis International Airbort-Axb. 358
3 Start and finish times	
4 Print options	
\$ Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	· · · · · · · · · · · · · · · · · · ·
9 Airfield network	· · · · · · · · · · · · · · · · · · ·
10 Number of runways 11 Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gata hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
30 Touch-end-do runway occupancy times	
31 Departure runway occupancy times	
32 Taxi speeds	
33 Approach speeds	
34 Gate service times	
35 Airspace travel times	
16 Runway drossing times	
17 Lateness distribution	
39 Cemand	1985 MER demands by the as
	1

PEAT MARWICK MITCHELL AND CO SAN FRANCISCO CALIF F/G 1/2 LAMBERT-ST. LOUIS INTERNATIONAL AIRPORT DATA PACKAGE NUMBER 5. --ETC(U) JUN 80 AD-A099 880 **U**NCLASSIFIED 20+2 END DATE FILMED 8 -8h DTIC

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. <u>Logistics</u>	
1 Title	Lambert-St. Louis International Airport-Exp. 51
2 Random number seeds	Hambert Sol Bears Indexing College Harbort Harbort
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	<u> </u>
9 Airfield network	
10 Number of runways	
ll Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
10 Touch-end-go runway occupancy times	
31 Departure runway occupancy times	
32 Taxi speeds	·
33 Approach speeds	
34 Gate service times	
15 Airspace travel times	
36 Runway crossing times	
. 37 Lateness distribution	
38 Demand	1990 VFR demand and mix (Table 17)
* }	TOO IT IN ACTUALITY WITH TIADLE IT!

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4. Logistics	Lambert-St. Louis International Airport-Exp. 52
1 Title	
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	·
8 Time switch	
b. Airfield Physical Characteristics	,
9 Airfield network	
10 Number of runways	
11 Runway identification	
12. Departure runway and links	; 
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Frocedures	
18 Aircraft separations	
19 Route data 20 Two-way path data	
21. Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gata hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxivay utilization	
29 Arrival runway occupancy times	
30 Touch-end-go runway occupancy times	
31 Departure runway occupancy times	
32 Taxi speeds	
13 Approach speeds	
14 Gate service times	
35 Airspace cravel times	
36 Runway crossing times	
17 Laceness distribution	1000 TDD1 3331 (m-h)- 12\
38 Demand	1990 IFR1 demand and mix (Table 17)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
1. Title	Tambout Ch. Touis Tatourstions Liment Tou
2 Random number seeds	Lambert-St. Louis International Airport-Exp. 55
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	· · · · · · · · · · · · · · · · · · ·
9 Airfield network	
10 Number of runways	
11 Runway identification	
12. Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
1 18 Aircraft separations	
19 Route data	· ·
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gata hold control	
25 Ceparture airspace constraints	
25 Departure queue	
27 Runway crossing dalay control	
d. Aircraft Operational Characteristics	
d. Aircraft Operational Characteristics  28 Exit taxiway utilization	
29 Arrival runway occupancy times	
30 Touch-and-go runway occupancy times	
31 Ceparture runway occupancy times	
32 Taxi speeds	
13 Approach speeds	
34 Gate service times	
35 Airspace travel times	
36 Runway crossing times	
17 Lateness distribution	
38 Cemand	1990 IFR1 demand and mix (Table 17)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logistics	
l Title	Lambert-St. Louis International Airport-Exp. 57A
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	`
9 Airfield network	
10 Number of Funways	
11 Runway identification	
12 Departure Funway and links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
	<u> </u>
c. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	(
23 Departure runway queue control	
24 Gate hold control	
25 Departure airspace constraints	
25 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival Funway occupancy times	
30 Touch-end-go runway occupancy times	
31 Ceparture runway occupancy times	
32 Taxi speeds	
33 Approach speeds	
34 Gate service times	
35 Airspace travel times	
36 Runway crossing times	
. 37 Lateness distribution	
38 Demand	1990 VFR demand and mix (Table 17)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logistics	District to the second
1 Title	Tombook Ch. Touris Tabanatian I alimate 57
2 Random number seeds	Lambert-St. Louis International Airport-Exp. 57
3 Start and finish times	
4 Frint options	
5 Airline names	
6 Processing options	
7 Truncation limits	
1 Time switch	
1	
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
C. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	·
24 Gate held control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
30 Touch-and-go runway occupancy times	
31 Ceparture runway occupancy times	
32 Taxi speeds	
33 Approach speeds	<u> </u>
34 Gate service times	
35 Airspace travel times	
16 Runway crossing times	
17 Lateness distribution	
38 Jemand	1990 IFRL demand and mix (Table 17)

•		CTIAT	TRATON MODEL THOUSA	DESCRIPTION OF INPUT CHANGE
}			ILATION MODEL INPUT	DEPOSITE 1704 OF WIS OF CHIMNES
	4.	Logia		Tambert-St Touis International Airport-Fun So
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-			Random number seeds Start and finish times	
<b>'</b>				
			Print options	
<u>ڼ</u>			Airline names	
-			Processing options	
-			Truncation limits	
<b>'</b> -		<u>-</u> -	Time switch	
,-		21-00	ield Physical Cheracteristics	
-	<u> </u>		Airfield network	<u> </u>
_				
1			Number of runways	
<u></u>			Runway identification	
_			Departure runway and links Runway crossing links	
-		13		
<b>'</b>			Exit taxiway location	
1-			Holding areas	
H		16		
_	<b>10</b>	1.7	General aviation basing areas	<u></u>
	c -	ATC	Procedures	
_	_ <u>#</u>		Aircraft separations	<del></del>
_		19	Route data	
-		20	Dec-way path data	
_		21	Common approach paths	
-	<del></del>		Vectoring delays	
-		23		
-			Gate hold control	
r		25	Departure airspace constraints	
<u>_</u>			Departure queue	
-			Runway crossing delay control	
r				
	₫.	Aire	graft Operational Characteristics	
ſ		28	Exit taxiway utilization	
7		29	Arrival runway occupancy times	
Ī		30	Touch-end-go runway occupancy times	
		31	Departure runway occupancy times	
		32	Taxi speeds	·
[		33	Approach speeds	
.[		34	Gate service times	
1			Airspace travel times	
T		36	Runway crossing times	
		37	Lateness distribution	
(		38	Jemand	1990 IFR1 demand and mix (Table 17)
ſ			•	

SIMULATION MODEL INPUT	description of input change
	Paratition of Theor Chines
e. <u>Logistics</u>	
1 Title	Lambert-St. Louis International Airport-Exp. 60
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	•
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway end links	
11 Runway crossing links	
14 Exit taxiway location	
15 Solding areas	
- 16 Airline gates	
17 General aviation basing areas	
11 Command Salation Desired States	
G. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gate hold control	
25 Departure airspace constraints	
28 Departure queus	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
30 Touch-end-go runway occupancy times	
31 Ceparture runway occupancy times	
J2 Taxi speeds	
13 Approach speeds	
34 Gate service times	
15 Airspace travel times	
36 Runway crossing times	
17 Lateness distribution	
38 Cemand	1990 IFR1 demand and mix (Table 17)

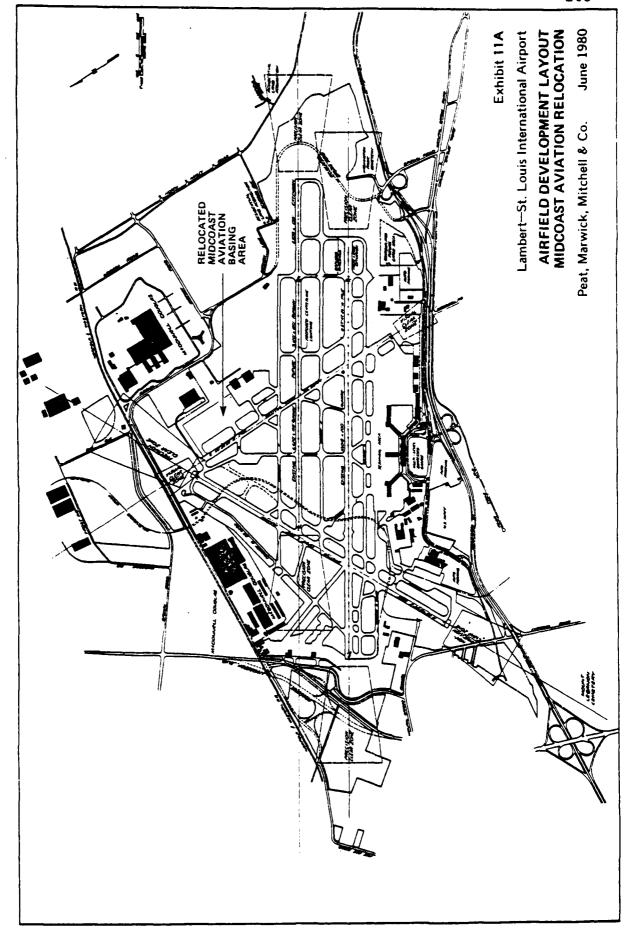
SIMULATION MODEL INPUT	description of input change
a. <u>Logistics</u>	
1 Title	Lambert-St. Louis International Airport-Exp. 61
2 Random number seeds	Tambert-St. 18818 International Alrooft-Day. 92
3 Start and finish times	
4 Frint options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
li Runway identification	
12 Departure runway end links	
والمراقب والمراقب المراقب المراقب والمراقب والمراقب والمراقب والمراقب والمراقب والمراقب والمراقب والمراقب	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	
, 19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing dalay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
30 Touch-end-go runway occupancy time	
31 Ceparture runway occupancy times	
J2 Taxi speeds	
33 Approach speeds	
34 Gate service times	
35 Airspace travel times	
16 Runway crossing times	
37 Lateness distribution	
38 Demand	1000 7001 4
	1990 IFR1 demand and mix (Table 17)

Experiment Number: 62 (Input changes from experiment number 43 )

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logistics	
1 Title	Lambert-St. Louis International Airport-Exp. 62
2 Random number seeds	Dambert Ct. 20013 International started
3 Start and finish times	
4 Print options	
S Airline names	
6 Processing options	
7 Truncation limits	
* Time switch	
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
21 Departure runway queue control	
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
29 Exit taxiway utilization 29 Arrival runway occupancy times	
10 Touch-and-go runway occupancy times	
31 Departure runway occupancy times	
12 Taxi speeds	
33 Approach speeds	
34 Gate service times	
35 Airspace travel times	
16 Runway crossing times	
37 Lateness distribution	
36 Demand	1990 IFR1 demand and mix (Table 17)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logistics 1 Title	Lambert-St. Louis International Airport-Exp. 63
2 Random number seeds	Lambert-St. Bours international Arrest Pap. 03
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
8 Time switch	
b. Airfield Physical Characteristics	` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` `
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
1	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21. Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	·
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
10 Touch-and-go runway occupancy times	
31 Departure runway occupancy times	
32 Taxi speeds	
33 Approach speeds	
34 Gate service times	
35 Airspace travel times	
16 Runway crossing times	
17 Lateness distribution	
. 38 Demand	1990 VFR demand and mix (Table 17)

	SIM	JLATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4.		stics_	
		Title	Lambert-St. Louis International Airport-Exp. 64
	2	Random number seeds	
	3	Start and finish times	
	4	Print options	
	5	Airline names	
	6	Processing options	
	7	Truncation limits	
	8	Time switch	
<u> 5.</u>	Airf	ield Physical Characteristics	,
	9	Airfield network	Relocation of Mid Coast Aviation (Exhibit 11A)
	10	Number of runways	
<u></u>	11	Runway identification	
	12.	Departure runway end links	
<b></b>	13	Runway crossing links	No crossing at old Mid Coast Aviation basing area
<u> </u>	14	Exit taxiway location	
	15	Holding areas	
<u> </u>	16	Airline gates	
<u> </u>	17	General aviation basing areas	Relocate Mid Coast Aviation basing area
<u> </u>			
<u>e-</u>	_==	Procedures	
<u>'</u>	18	Aircraft separations	
<del> </del>	19	Route data	New routes (Exhibits 11B and 11C)
	20	Two-way path data	
	21	Common approach paths Vectoring delays	
<b>-</b>	23	Departure runway queue control	
-		Gate hold control	
<b></b>	25	Departure airspace constr_ints	
	25		
_		Runway crossing delay control	
₫.	Aire	raft Operational Characteristics	
	28	Exit taxiway utilization	
	29	Arrival runway occupancy times	
	30	Touch-end-go runway occupancy times	
	31	Departure runway occupancy times	
	32	Taxi speeds	
	33	Approach speeds	
	34	Gate service times	
]	35	Airspace travel times	
<u></u>		Runway crossing times	
	37		
<u> </u>		Demand	
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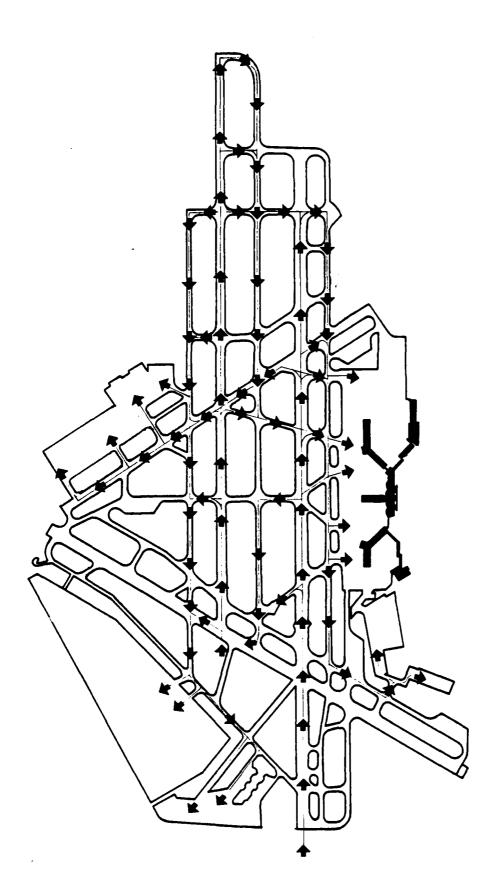


Exhibit 11B

Lambert—St. Louis International Airport

AIRFIELD DEVELOPMENT CONFIGURATION

MIDCOAST AVIATION RELOCATION

FLOW DIAGRAM

ARRIVALS ON RUNWAYS 12R AND 12L

Peat, Marwick, Mitchell & Co. June 1980

June 1980

Peat, Marwick, Mitchell & Co.

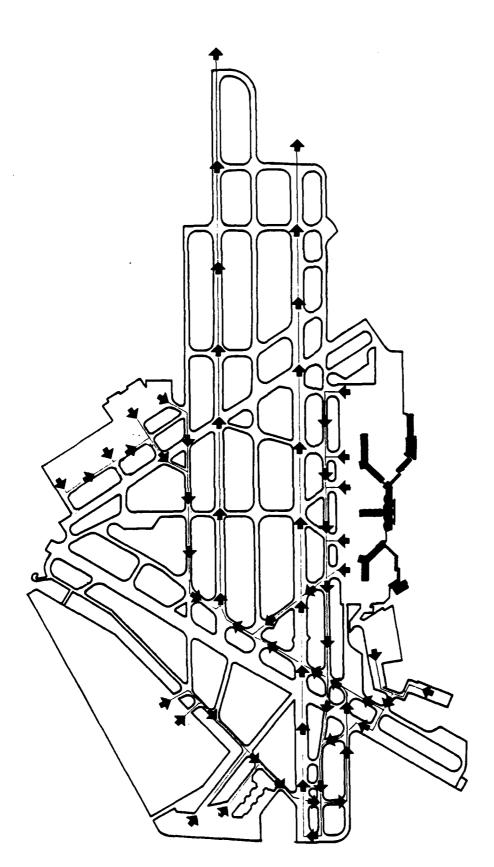


Exhibit 11C

Lambert—St. Louis International Airport

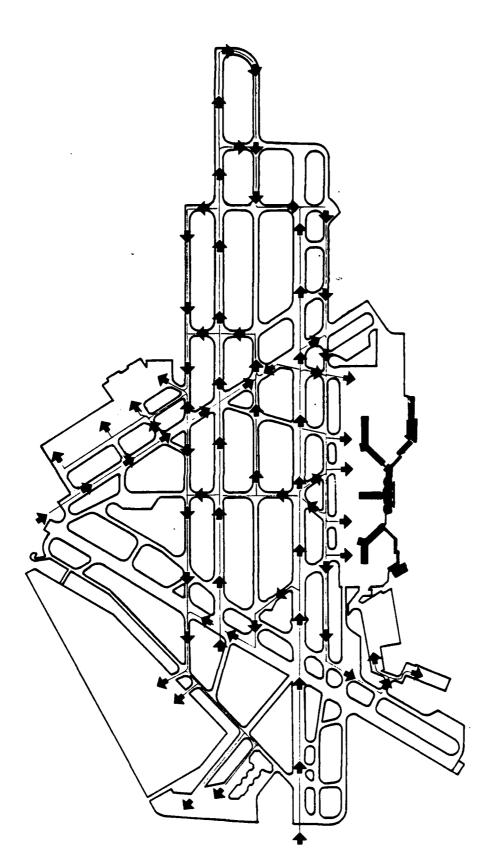
AIRFIELD DEVELOPMENT CONFIGURATION

MIDCOAST AVIATION RELOCATION

FLOW DIAGRAM

DEPARTURES ON RUNWAYS 12R AND 12L

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<del> </del>
SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Logistics	
l Title	Lambert-St. Louis International Airport-Exp. 64A
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
1 Time switch	
**************************************	
b. Airfield Physical Characteristics	
9 Airfield network	<del></del>
10 Number of runways	3
11 Runway identification	12L, 12R, 17
12. Departure runway and links	1007 1007 17
1 13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
	<u> </u>
· 16 Airline gates	<u> </u>
17 General aviation basing areas	
	<del></del>
c. ATC Procedures	
18 Aircraft separations	
19 Route data	New route data (Exhibits 12A and 12B)
20 Two-way path data	<u></u>
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	·
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
10 Touch-end-go runway occupancy times	
31 Departure runway occupancy times	
32 Taxi speeds	
13 Approach speeds	
. 34 Gate service times	
15 Airspace travel times	
16 Runway crossing times	
17 Lateness distribution	
38 Camand	
·	



AIRFIELD DEVELOPMENT CONFIGURATION
MIDCOAST AVIATION RELOCATION
FLOW DIAGRAM
ARRIVALS ON RUNWAYS 12R, 12L AND 17 Exhibit 12A Lambert—St. Louis International Airport June 1980

Peat, Marwick, Mitchell & Co.

June 1980

Peat, Marwick, Mitchell & Co.

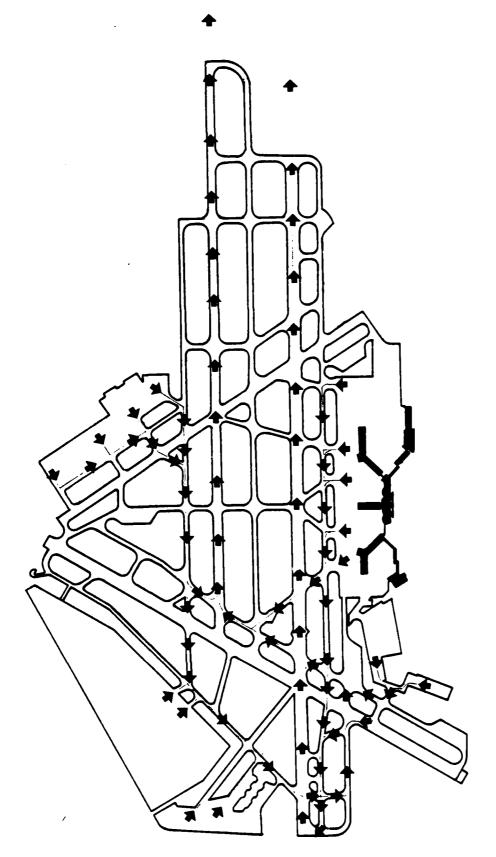


Exhibit 12B

Lambert—St. Louis International Airport

AIRFIELD DEVELOPMENT CONFIGURATION

MIDCOAST AVIATION RELOCATION

FLOW DIAGRAM

DEPARTURES ON RUNWAYS 12R AND 12L

simulation model input	DESCRIPTION OF INPUT CHANGE
a. Logistics	
1 Title	Lambert-St. Louis International Airport-Exp. 51A
2 Random number seeds	
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
1 Time switch	
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of Funways	
ll Runway identification	
12 Ceparture runway and links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	
c. ATC Procedures	
18 Aircraft separations	
19 Route data	
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
d. Aircraft Operational Characteristics	,
28 Exis taxiway utilization	
29 Arrival runway occupancy times	
30 Touch-and-go runway occupancy simes	
31 Ceparture runway occupancy times 12 Taxi speeds	
1 13 Approach speeds	
14 Gate service times	
35 Airspace travel times	
16 Runway crossing times	
17 Lateness distribution	
38 Jemand	1990 VFR demand-increase heavy aircraft
\	operations (Table 17)

# Experiment Number: 518 (Input changes from experiment number 51)

, SIM	ULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
a. Log	istics	
1	Title	Lambert-St. Louis International Airport-Exp. 51B
2	Random number seeds	
3	Start and finish times	
4	Print options	
5	Airline names	
6	Processing options	
7	Truncation limits	
	Time switch	
·		
b. Air	field Physical Characteristics	· · · · · · · · · · · · · · · · · · ·
9	Airfield network	
10	Number of runways	
11	Runway identification	
12	Departure runway and links	
, 13	Runway crossing links	
14	Exit taxiway location	
1.5	Holding areas	
. 10	Airline gates	
17	General aviation basing areas	
_		
c. AT	Procedures	
1 18	Aircraft separations	
15	Route data	·
20	Two-way path data	
2.	Common approach paths	
2:	Vectoring delays	
2.	Departure runway queue control	·
2	Gate hold control	
2.	Departure airspace constraints	
2:	5 Departure queue	
2	7 Runway crossing delay control	
	rcraft Operational Characteristics	
2	Exit taxiway utilization	
2:	Arrival runway occupancy times	
3	Touch-and-go runway occupancy times	
	l Departure runway occupancy times	
	2 Taxi speeds	
ļ	3 Approach speeds	
·	4 Gate service times	
	5 Airspace travel times	
ļ	6 Runway crossing times	
	7 Laceness distribution	1000 ton demand degrees (% onerstiens (makin 17)
• †	8 Demand	1990 VFR demand-decrease GA operations (Table 17)

SIMULATION MODEL INPUT	DESCRIPTION OF INPUT CHANGE
4. Logistics	
1 fiele	Lambert-St. Louis International Airport-Exp. 72
2 Random number seeds	Deamete St. Bours International Alipoit-EAS. /2
3 Start and finish times	
4 Print options	
5 Airline names	
6 Processing options	
7 Truncation limits	
* Time switch	
	<u> </u>
b. Airfield Physical Characteristics	
9 Airfield network	
10 Number of runways	
11 Runway identification	
12 Departure runway end links	
13 Runway crossing links	
14 Exit taxiway location	
15 Holding areas	
· 16 Airline gates	
17 General aviation basing areas	L
G. ATC Procedures	
18 Aircraft separations	Post 1985 IFR separation (Table 14)
20 Two-way path data	
21 Common approach paths	
22 Vectoring delays	
23 Departure runway queue control	
24 Gate hold control	
25 Departure airspace constraints	
26 Departure queue	
27 Runway crossing delay control	
wanted crossrud catal concret	
d. Aircraft Operational Characteristics	
28 Exit taxiway utilization	
29 Arrival runway occupancy times	
30 Touch-and-go runway occupancy times	
31 Ceparture Funway occupancy times	
12 Taxi speeds	
33 Approach speeds	· · · · · · · · · · · · · · · · · · ·
34 Gate service times	
35 Airspace travel times	
36 Runway crossing times	
37 Lateness distribution	
38 Cemand	

#### Arrival-Arrival Separations (nautical miles):

		Trail	Airc	caft C	Lass
		A	В	C	D
Lead	A	3.0	3.1	3.2	3.2
1 i	В	3.0	3.1	3.2	3.2
Aircraft	С	3.5	3.6	3.2	3.2
Class	D	4.0	4.1	3.7	3.2

#### Departure-Departure Separations (seconds):

		Trai]	l Airc	raft C	lass_
		A	<u>B</u>	<u></u>	D
Lead	A	60	60	60	60
	В	60	60	60	60
Aircraft	С	60	60	60	60
Class	D	60	60	60	60

Table 15

#### 1979 DEMAND AND MIX

#### Annual Operations = 344,600

		Mix of	operations	(percent)
Aircraft Class		VFR	<u>IFR1</u>	IFR2
A		7%	4%	1%
В		28	24	19
С		63	70	77
D		2	2	3
т	otal	100%	100%	100%

Table 16

# POST 1985 DEMAND AND MIX (Stage I growth)

A. Baseline Annual operations = 344,000

		Mix	of operations	(percent)
Aircraft Class	<u>.</u>	VFR	<u>IFR1</u>	IFR2
A	_	5%	3%	1%
В		25	20	13
С		55	61	68
D T	otal	15 100%	16 100*	18 100

B. Increased Heavy Jets
Annual operations = 336,000

34		Mix of operati	
Aircraft Class	VFF	<u>IFR1</u>	IFR2
A	5	5% 3%	1%
В	27	21	15
С	42	2 47	52
D To	26 tal 100		32 100%

C. Reduced General Aviation Annual operations = 319,000

		Mix of	operations	(percent)
Aircraft Class	<u>s</u>	VFR	IFRL	IFR2
A		3%	2%	1%
В		20	12	4
С		60	67	74
<b>D</b>	<b>Total</b>	17 100%	19 100%	21 100%

Table 17

# POST 1990 DEMAND AND MIX (Stage II growth)

A. Baseline Annual operations = 374,000

		Mix	of operations	(percent)
Aircraft Clas	s	VFR	<u>IFR1</u>	IFR2
A		3%	2%	1%
B	•	23	16	8
С		50	55	61
ם	Total	24 100%	27 100%	30 100%

B. Increased Heavy Jets
Annual operations = 339,000

		Mix of	operations	(percent)
Aircraft Clas	s	VFR	IFR1	IFR2
A		4%	2%	1%
В		25	19	11
С		34	37	42
D	Total	37 100%	42	46 100%

C. Reduced General Aviation Annual operations = 344,000

		Mix	of operations	(percent)
Aircraft Clas	s	VFR	<u>IFR1</u>	IFR2
A		3%	2%	1%
В		19	11	4
С		53	59	65
D	Total	25 100%	28 100%	30 100%

Table 18

RUNWAY ASSIGNMENT - EXISTING AIRFIELD LAYOUT

		Percent of Aircraft							
			Arrivals			Departures			
Experiment No.	Runway	A	В	С	D	A	В	С	D
1,1A,26	12L	100	80	20		100	80	20	
- <b>,</b>	12R		20	80	100		20	80	100
2,27	12L	100	70			100	100	20	
-	12R		30	100	100			80	100
3,28	12L					100	100	20	
	12R	100	100	100	100			80	100
4,4A,29	30R	100	80	20	100	100	80	20	100
	30L		20	80	100		20	80	100
5,30	30R	100	70			100	100	20	
	30L		30	100	100			80	100
6,31	30R					100	100	20	
	30 <b>L</b>	100	100	100	100			80	100
7A,32A	30R		90	20		100	90	20	
	30L		10	80	100		10	80	100
	24	100							
7,32	30R					100	100	20	
	30L 24	100	100	100	100			80	100
			200						
8	6						20	85	
	12L 12R	100	80 20	10 90	100	100	80	15	100
			20	90	100				100
9,33	6						20	80	
	12L	100	70	100		100	80	20	100
	12R		30	100	100				100
10	6						20	80	
	12L				100	100	80	20	
	12R	100	100	100	100	<del></del>			100
11	24	100	100	100	100	100	100	100	100
12	12L		100	20		100	95	20	
	12R			80	100		5	80	100
	17	100							
13,34	12L		100			100	100	20	
	12R			100	100			80	100
	17	100						~-	

Table 19

RUNWAY ASSIGNMENT--WITH AIRFIELD DEVELOPMENT

,

#### ATTACHMENT B

#### INPUT DATA SUMMARY

#### ANNUAL DELAY EXPERIMENTS

Lambert-St. Louis International Airport

St. Louis Airport Improvement Task Force Delay Studies

Prepared by

Peat, Marwick, Mitchell & Co. San Francisco, California

June 1980

#### Experiment 81

- 1. Annual Demand: 344, 600
- 2. Group Specification:

  - 3 day groups high, average, low 12 week groups 12 months, January through December (1978)
  - 3 weather groups VFR, IFR1, IFR2 and 3
  - 6 runway uses

	Arrival runways	Departure runways			
1. 2. 3.	12R, 12L 30R, 30L 30R, 30L, 24 12R, 12L	12R, 12L 30R, 30L 30R, 30L 12R, 12L, 6			
5. 6.	24 12R, 12L, 17	24 12R, 12L			

3& 4. Traffic Distributions: Revised 74 From D.P. # 3

Week group	Jan.	Feb.	Mar.	Apr.	May	June
Percent of annual in one week	1.70 1.74		1. 64 1.88			
Number of weeks in one month	4.43	4.0	4.43	4.29	4.43	4.29
Percent of annual in one month		6.85 7.00	₹. / ¢ 8 <b>.</b> 34	9. <b>27</b> 8.44		ع. ۱۶ 9.01
Week group	July	Aug.	Sep.	Oct.	Nov.	Dec.
Week group  Percent of annual in one week	July 2.00 2.05		2.11		Nov. /. & 9 1.89	1.79
Percent of annual in one	2.05	2.08	2.11	1.60	1. 34	1.79

no ozark awhere strike. Ozarla awhere has an estimated affected sople, at., Nov. tattic and lasted 52 days. it st. Strike

Day group	High	Average	Low
Percent of weekly in one day	16.04	14.49	11.45
Number of days in day group	3	2	2
Percent of weekly traffic in day group	48.13	28.98	22.89

#### 7. Weather Occurrences:

		Jan.	Feb.	Mar.	Apr.	May	June	
	Percent VFR	81.16	85.70	86.83	93.89	95.06	96.85	:
	Percent IFR1	5.33	4.26	5.07	2.86	2.31	1.60	
	Percent IFR2&3	13.51	10.04	8.10	3.25	2.63	1.55	
		July	Aug.	Sep.	Oct.	Nov.	Dec.	
** • *	Percent VFR	97.12	94.04	92.38	92.97	89.65	85.78	47 14.
• ***	Percent IFR1	1.88	3.29	3.13	3.25	4.93	5.25	1:7. (
.554	Percent IFR2&3	1.00	2.67	4.49	3.78	5.42	8.97	~
								5214.50

#### 8. Hourly Runway Capacity Parameters:

	Hourly	Capaci	ity (Ops/hr)
Runway use	VFRL	IFRI	IFR2&3
1	86	59	58
2	86	59	5 <b>8</b>
3	91`	60	9د
4	92	59	58
5	55	53	47
6	91	60	59

9. Runway Use/Weather Group Demand Factors:

	VFR	<u>IFR1</u>	IFR2&3
For all runways	1.0	0.9	0.81

10. Runway Use Occurrence:

	Percent occurrence					
Runway	VFR1	IFRI	IFR2&3			
1 .	45	41.8	23.9			
2	53	56.7	74.1			
3	0.7	0.5	0.3			
4	0.3	0.2	0.2			
5	0.7	0.6	1.4			
6	0.3	0.2	0.1			

11. Hourly Traffic:

Hour	Percent daily traffic	Hour	Percent daily traffic	Hour	Percent daily traffic	Hour	Percent daily traffic
00 01	0.2	06 07	1.2	12 13	6.5 6.7	18 19	7.0 6.8
02	0.2	08	6.0	14	6.5	20	5.3
03		09	7.8	15	4.8	21	3.7
04	0.6	10	6.6	16	6.8	22	2.7
05	0.8	11	6.4	17	7.7	23	1.2

12&

13. Delay Curve Specifications: To be determined after airfield simulation runs

14. Percent Arrivals - Daily percentage - 49.9%

Hour	Percent arrivals	Hour	Percent arrivals	Hour	Percent arrivals	Hour	Percent arrivals
00	50.0	06	50.0	12	46.0	18	45.0
01	50.0	07	50.0	13	48.0	19	49.0
02	50.0	08	59.0	14	41.0	20	48.0
03	50.0	09	46.0	15	59.0	21	50.0
04	50.0	10	39.0	16	60.0	22	50.0
05	50.0	11	57.0	17	54.0	23	50.0

15. Cancellation Diversion Specification: To be provided by Task Force

16. Title: St. Louis Annual Baseline 1979 Demand and Mix

Table 20

# DEMAND AND TRAFFIC DISTRIBUTION Lambert-St. Louis International Airport Airport Improvement Task Force Delay Studies

Annual Demand: 1978 - 340,476 1979 - 336,578 Revised 1979 - 344,600

Traffic Distribution:

1978

Week group	Jan.	<u>Peb.</u>	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Percent of annual in one week	1.63	1.75	1.83	1.95	1.94	2.11	1.95	2.08	2,18	2.02	1.84	1.73
Number of weeks in one month	4.43	4.00	4.43	4.29	4.43	4.29	4.43	4.43	4.29	4.43	4.29	4.43
Percent of annual in one month	7.21	7.01	8.10	8.36	8.60	9.05	8.62	9.21	9.34	8.95	7.90	7.65
1979												
Percent of annual in one week	1.74	1.75	1.88	1.97	2.11	2.10	2.05	2.13	1.92	1.60	1.89	1.84
Number of weeks in one month	4.43	4.00	4.43	4.29	4.43	4.29	4.43	4.43	4.29	4.43	4.29	4.43
Percent of annual in one month	7.70	7.00	8.34	8.44	9.35	9.01	9.08	9.43	8.49	6.88	8.09	8.13
Revised 1979	•							,				
Percent of annual in one week	1.70	1.71	1.84	1.92	2.06	2.05	2.00	2.08	2.11	1.82	1.89	1.79
Number of weeks in one month	4.43	4.00	4.43	4.29	4.43	4.29	4.43	4.43	4.29	4.43	4.29	4.43
Percent of annual in one month	7.5.	6.83	8.14	8.24	9.13	8.81	8.87	9.21	9.07	8.08	8.09	7.94

a. Assumes no Ozark Airlines strike. Ozark Airlines has an estimated 4,700 operations per month at St. Louis. Strike affected September, October, and November traffic figures and lasted 52 days.

1.	Annual Demand	344, 600
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 81A

Table 21

AIRFIELD DEVELOPMENT PLAN
RUNWAY USE OCCURENCE

	Percent occurence			
Runway use	VFRL	<u>IFR1</u>	IFR2 & 3	
1	3	3	24	
2	4	4	74.4	
3	68.8	68.8		
4	22.2	22.2	0.2	
5	1	1	1.4	
6	1	1		

ST. LOUIS DATA PACKAGE

1.	Annual Demand	Stage I Demand - 344,000
2.	Group Specification	
- 3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed .
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 82

1.	Annual Demand	Stage I Demand - 344,000
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 83

1.	Annual Demand	Stage I Demand - 344,000
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12. 13.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 84

1.	Annual Demand	Stage I Demand - Demand - Increase Heavy Jets 336,000
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 85

1.	Annual Demand	Stage I Demand - Reduced G.A. 319.000
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 86

1. Annual Demand	Stage II Demand - 374,000
2. Group Specification	
3. Traffic Distribution 4.	
5. Daily Traffic Distribution 6.	
7. Weather Occurrences	
8. Hourly Runway Capacity Parameter	To be computed
9. Runway Use/Weather Group Demand Factor	
10. Runway Use Occurrences	See Table 21
11. Hourly Traffic	
12. Delay Curve Specification 13.	To be determined by airfield simulation
14. Percent Arrivals	
15. Cancellation Diversion Specification	
16. Title	Lambert-St. Louis International Airport Experiment

1.	Annual Demand	Stage II Demand - 374,000
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 88

1.	Annual Demand	Stage II Demand - 374,000
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 89

# ST. LOUIS DATA PACKAGE Annual Delay Model Changes From Experiment 81

1.	Annual Demand	Stage II Demand - Increased Heavy Jets 339,000
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 90

1.	Annual Demand	Stage II Demand - Reduced G.A. 344,000
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 91

# ST. LOUIS DATA PACKAGE Annual Delay Model Changes From Experiment 81

1.	Annual Demand	Stage II Demand - 374,000
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 92

1.	Annual Demand	Stage II Demand - Increased Heavy Jets
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 93

1.	Annual Demand	Stage II Demand - Reduced G.A. 344,000
2.	Group Specification	
3. 4.	Traffic Distribution	
5. 6.	Daily Traffic Distribution	
7.	Weather Occurrences	
8.	Hourly Runway Capacity Parameter	To be computed
9.	Runway Use/Weather Group Demand Factor	
10.	Runway Use Occurrences	See Table 21
11.	Hourly Traffic	
12. 13.	Delay Curve Specification	To be determined by airfield simulation
14.	Percent Arrivals	
15.	Cancellation Diversion Specification	
16.	Title	Lambert-St. Louis International Airport Experiment 94

#### ATTACHMENT C

### SUMMARY OF RESULTS OF

### AIRFIELD SIMULATION MODEL EXPERIMENTS

(Six Baseline Scenarios and Ten Noise Abatement Scenarios)

Lambert-St. Louis International Airport

St. Louis
Airport Improvement Task Force Delay Studies

Prepared by

Peat, Marwick, Mitchell & Co. San Francisco, California

June 1980

# Summary Description

### Noise Abatement Scenarios

There are five scenarios studied for VFR operations on (1) Runways 12L and 12R; and (2) Runways 30L and 30R, with the existing airfield layout. The simulation runs are performed without stretching the arrival gaps.

### Scenario 1:

In this scenario, the departures on both runways are assumed to make their turns 60 seconds after the beginning of their take off roll.

### Scenario 2:

In this scenario, the departures on both runways are assumed to make their turns as soon as they are airborne and stabilized.

### Scenario 3:

In this scenario, departures on Runway 12R (or 30L) are assumed to make their turns after reaching an altitude of 1,500 feet. Departures on Runway 12L (or 30R) operate in the same manner as in Scenario 1.

#### Scenario 4:

In this scenario, departures on Runway 12R (or 30L) are assumed to make their turns after reaching an altitude of 1,500 feet. Departures on Runway 12L (or 30R) are assumed to turn as soon as they are airborne and stabilized.

### Scenario 5:

In this scenario, the departures on both runways are assumed to go straight out until they reach an altitude of 1,500 feet.

SUMMARY RESULTS OF BASELINE EXPERIMENTS
Airfield Simulation Model Runs
St. Louis Task Force Delay Studies
Lambert-St. Louis International Airport

						Hourly flow rates	ow rates			RU	Runway delays (minutes)	s (minute	3)
		Runways	s used	-	Averagea		P	Peak hourb		Averageb	dep	Peak hour	hour
Experiment		Arriv-	Depar-	Arriv-	Depar-		Arriv-	Depar-		Arriv-	Depar-	Arriv-	Depar-
90.	Description	vals	tures	vals	tures	Total	vals	tures	Total	vals	tures	vals	tures
1	1979 baseline	12R, 12L	12R, 12L	31.0	31.0	62.0	39.7	45.5	85.2	1.2	2.8	1.2	4.4
•	1979 baseline	30R, 30L	30R, 30L	30.9	31.0	61.9	40.7	45.1	85.8	0.7	2.3	0.8	2.8
۲.	1979 baseline	30R, 30R, 1ine 30L, £ 30L 24	30R, 30L	30.9	31.0	61.9	40.0	49.6	9.6	9.0	8.0	0.7	1.2
œ	1979 baseline	12R, 12L	12R, 12L, 6 6	31.0	31.0	62.0	40.0	47.0	87.0	0.7	8.0	1.0	6.0
п	1979 baseline	24	24	20.2	21.7	41.9	20.6	23.7	44.3	105.6	14.6	123.9	12.6
12	1979 baseline	12R, 12L, 6 17c	12R, 12L	31.0	31.0	62.0	40.0	46.0	86.0	0.7	2.2	0.8	3.5

Averaged over the entire simulation period (15 hours). For the peak demand hour, 1700-1800 hours. General aviation operations only on Runway 17.

4 4 °

SUMMARY RESULTS OF NOISE ABATEMENT SCENARIOS Airfield Simulation Model Runs St. Louis Task Force Delay Studies Ismbert-St. Louis International Airport

				- 1	Hourly flow rates	w rates			Run	Runway delays (minutes)	(minutes	
•	Runways used	nsed	1	Average		Pe	Peak hour	!	Averagea	gea	Peak hourd	pour D
Experiment no.c	Arriv-	Depar- tures	Arriv-	Depar- tures	Total	Arriv-	Depar- tures	Total	Arriv-	Depar- tures	Arriv-	Depar- tures
1-Noise 1	12R, 12L	12R, 12L	30.9	31.0	61.9	40.7	43.7	84.4	0.7	3.8	9.0	4.6
1-Noise 2	12R, 12L	12R, 12L	31.0	31.0	62.0	40.6	48.0	98.6	0.7	2.2	9.0	3.6
1-Noise 3	12R, 12L	12R, 12L	31.0	31.0	62.0	40.7	41.6	82.3	0.7	<b>4</b> .9	9.0	6.2
1-Noise 4	12R, 12L	12R, 12L	31.0	31.0	62.0	40.6	42.1	82.7	0.7	<b>*</b> :	0.8	5.3
1-Noise 5	12R, 12L	12R, 12E	31.0	31.0	62.0	40.9	37.5	78.4	7.0	8.8	0.8	8.3
4-Noise 1	30R, 30L	30R, 30L	30.9	31.0	61.9	40.7	45.9	96.6	9.0	2.2	9.0	2.8
4-Noise 2	30R, 30L	30R, 30L	30.9	31.0	61.9	40.8	48.7	89.5	9.0	1.6	6.0	2.3
4-Noise 3	30R, 30L	30R, 30L	30.9	31.0	61.9	40.8	45.4	86.2	0.7	2.9	9.0	3.5
4-Noise 4	30R, 30L	30R, 30L	30.9	31.0	61.9	40.5	44.7	85.2	0.7	2.7	0.8	3.1
4-Noise 5	30R, 30L	30R, 30L	30.9	31.0	61.9	40.6	41.4	82.0	0.7	5.7	8.0	8.1

Average over the entire simulation period (15 hours). For the Peak demand hour, 1700-1800 hours. For a description of the noise scenarios see page 137. . . .

### Experiment No. 1

### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways

12R, 12L

12R, 12L

12R, 12L

# Length and Level of Detail of Simulation Run:

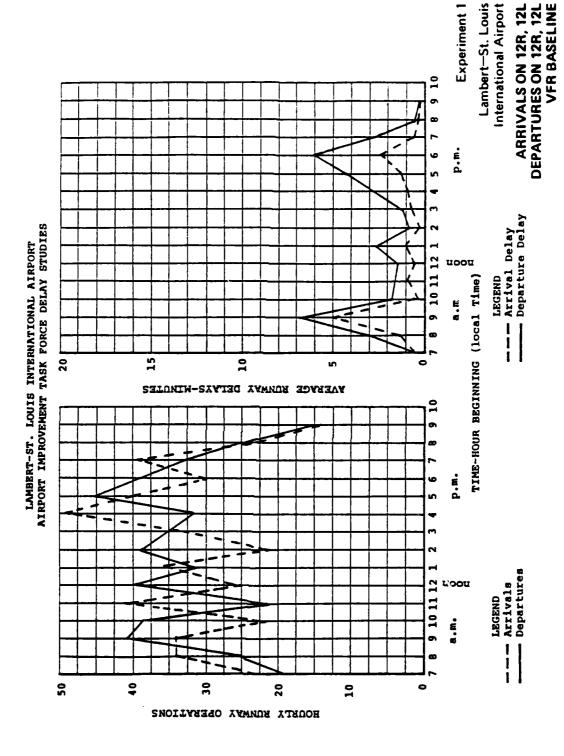
From 0700 to 2200 with 1-hour summaries.

### Results:

Operation <u>Type</u>	Performance Measure	Units	<u>Average</u> a	Peak b
Arrival Arrival	Flow rate Air delay	<pre>a/c per hr. minute</pre>	31.0 1.2	39.7 1.2
Departure Departure	Flow rate Runway	a/c per hr.	31.0	45.5
Debar care	delay	minute	2.8	4.4

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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### Experiment No. 4

### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways	Departure Runways
30R, 30L	30R, 30L

# Length and Level of Detail of Simulation Run:

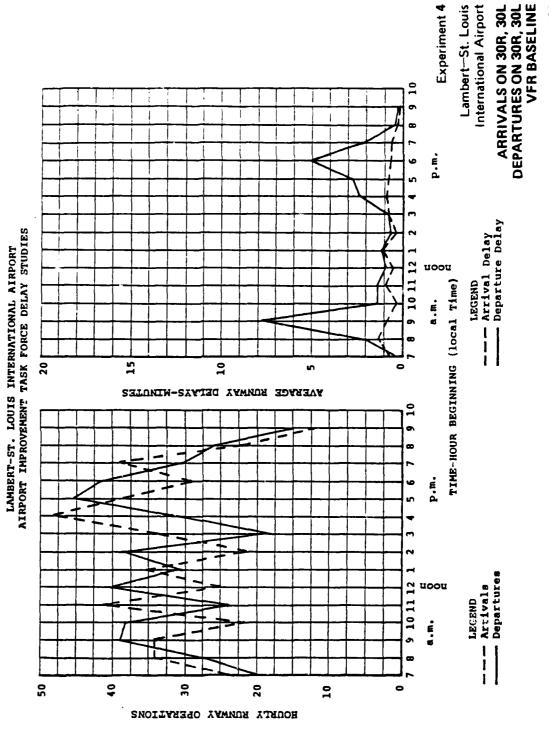
From 0700 to 2200 with 1-hour summaries and a short-form network.

### Results:

Operation Type	Performance Measure	Units	<u>Average</u> a	Peak_b
Arrival Arrival	Flow rate Air delay	a/c per hr. minute	30.9 0.7	40.7
Departure Departure	Flow rate Runway	a/c per hr.	31.0	45.1
pehar care	delay	minute	2.3	2.8

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways	Departure Runways
30R, 30L, 24	30R, 30L

# Length and Level of Detail of Simulation Run:

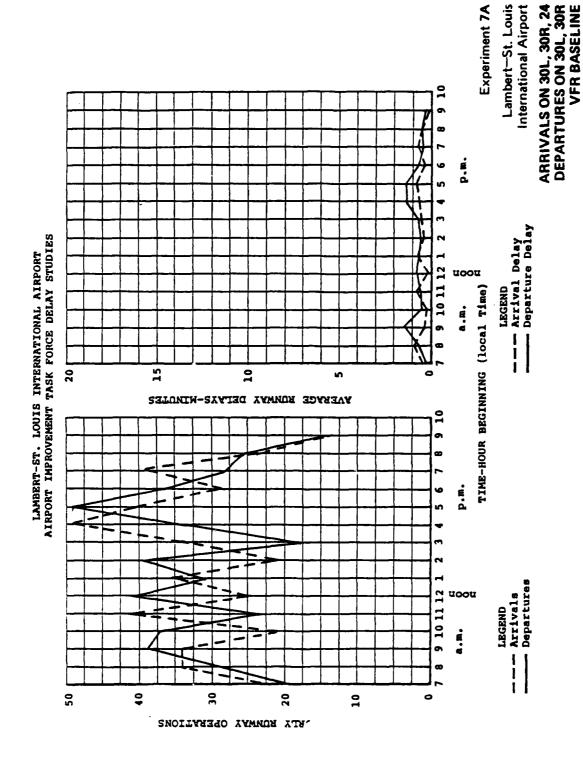
From 0700 to 2200 with 1-hour summaries and a short-form network.

### Results:

Operation Type	Performance Measure	Units	Averagea	Peak b
Arrival Arrival	Flow rate Air delay	a/c per hr. minute	30.9 0.6	40.0
Departure Departure	Flow rate Runway	a/c per hr.	31.0	49.6
pepar care	delay	minute	0.8	1.2

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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# Experiment No. 8

#### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways	Departure Runways
12R, 12L	12R, 12L, 6

# Length and Level of Detail of Simulation Run:

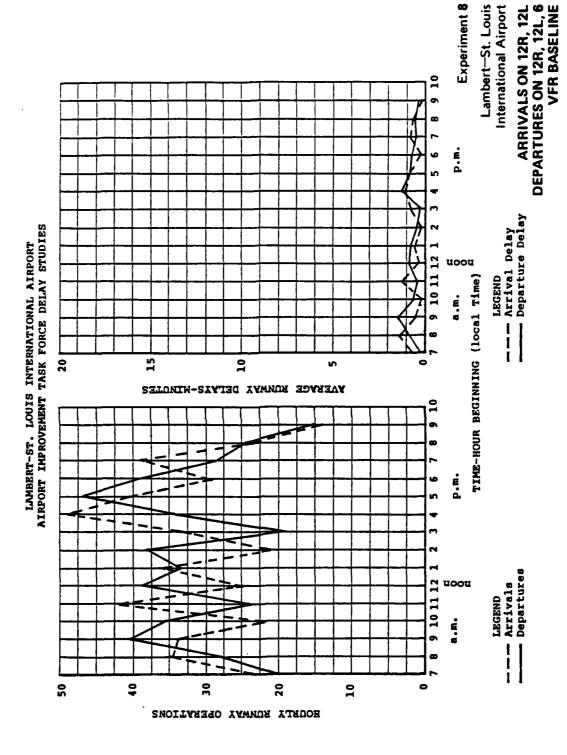
From 0700 to 2200 with 1-hour summaries and a short-form network.

### Results:

Operation Type	Performance Measure	Units	<u>Average</u> a	Peak b
Arrival Arrival	Flow rate Air delay	a/c per hr. minute	31.0 0.7	40.0
Departure Departure	Flow rate Runway	a/c per hr.	31.0	47.0
pepar care	delay	minute	0.8	0.9

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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### Experiment No. 11

#### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in IFR2 & 3 conditions for the following runway configuration:

Arrival Runways

Departure Runways

24

24

# Length and Level of Detail of Simulation Run:

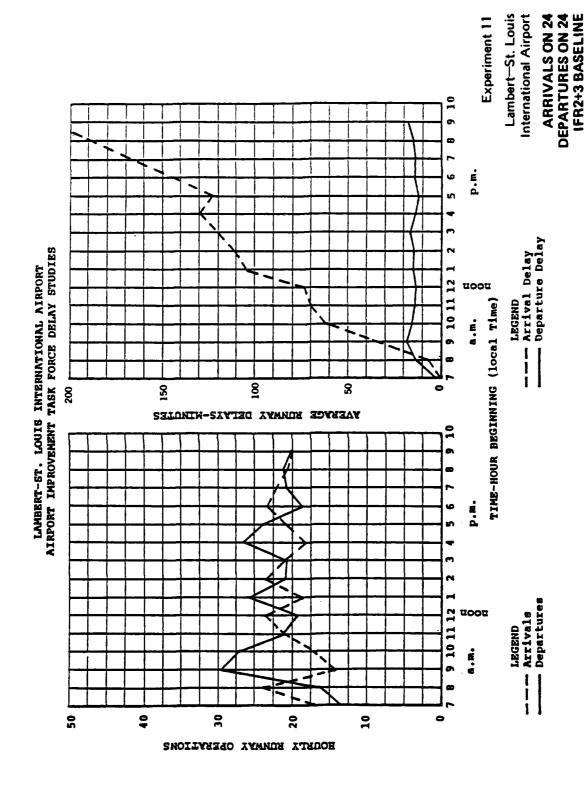
From 0700 to 2200 with 1-hour summaries.

#### Results:

Operation Type	Performance Measure	Units	Averagea	Peak b
Arrival Arrival	Flow rate Air delay	a/c per hr. minute	20.2 105.6	20.6 123.9
Departure Departure	Flow rate	a/c per hr.	21.7	23.7
nebar care	Runway delay	minute	14.6	12.6

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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### Experiment No. 12

#### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways

12R, 12L

GA Operations on 17

Departure Runways

12R, 12L

# Length and Level of Detail of Simulation Run:

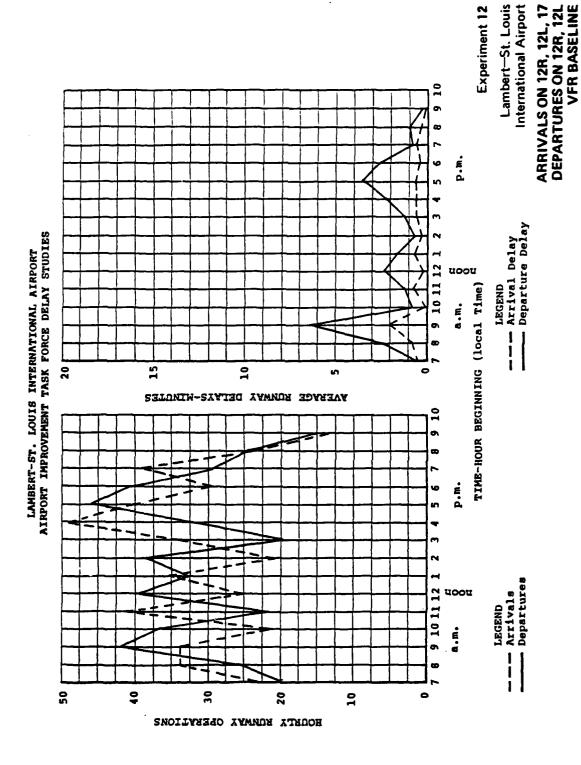
From 0700 to 2200 with 1-hour summaries and a short-form network.

#### Results:

Operation <u>Type</u>	Performance Measure	Units	Averagea	Peak
Arrival	Flow rate	a/c per hr.	31.0	40.0
Arrival	Air delay	minute	0.7	
Departure	Flow rate	a/c per hr	31.0	46.0
Departure	Runway delay	minute	2.2	3.5

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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## Experiment No. 1--NOISE 1

### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways

12R, 12L

12R, 12L

12R, 12L

# Length and Level of Detail of Simulation Run:

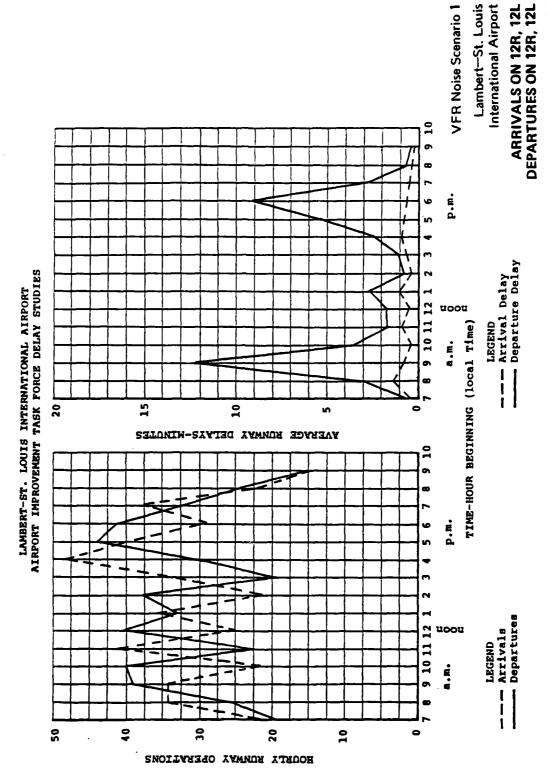
From 0700 to 2200 with 1-hour summaries and a short-form network.

#### Results:

Operation Type	Performance Measure	Units	<u>Average</u> a	<u>Peak</u> b
Arrival	Flow rate	a/c per hr.	30.9	40.7
Arrival	Air delay	minute	0.7	0.8
Departure	Flow rate	a/c per hr	31.0	43.7
Departure	Runway delay	minute	3.8	5.4

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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### Experiment No. 1--NOISE 2

### Scenario:

This experiment is a baseline case using the existing air-field layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways	Departure Runways
12R, 12L	12R, 12L

# Length and Level of Detail of Simulation Run:

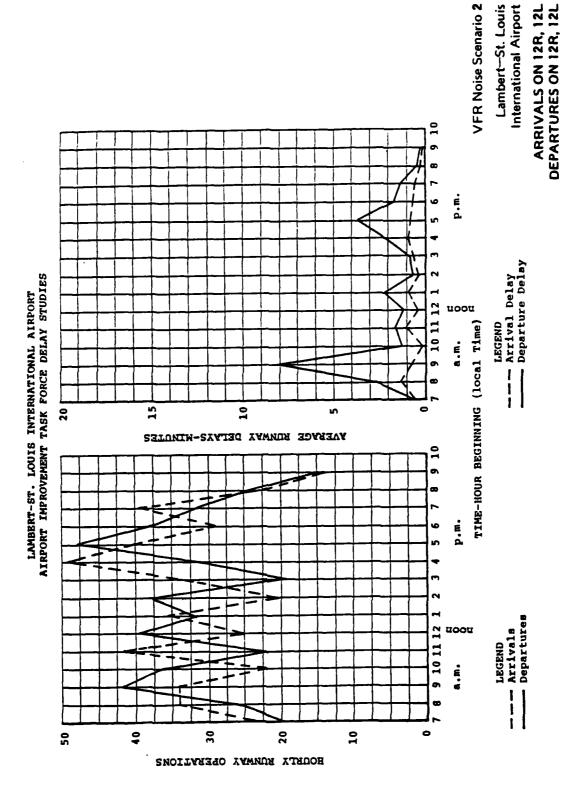
From 0700 to 2200 with 1-hour summaries and a short-form network.

#### Results:

Operation Type	Performance Measure	Units	Average	Peak <sup>b</sup>
Arrival	Flow rate	a/c per hr.	31.0	40.6
Arrival	Air delay	minute	0.7	0.8
Departure	Flow rate	a/c per hr	31.0	48.0
Departure	Runway delay	minute	2.2	3.6

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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# Experiment No. 1--NOISE 3

#### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways	Departure Runways
12R. 12L	12R, 12L

### Length and Level of Detail of Simulation Run:

From 0700 to 2200 with 1-hour summaries and a short-form network.

### Results:

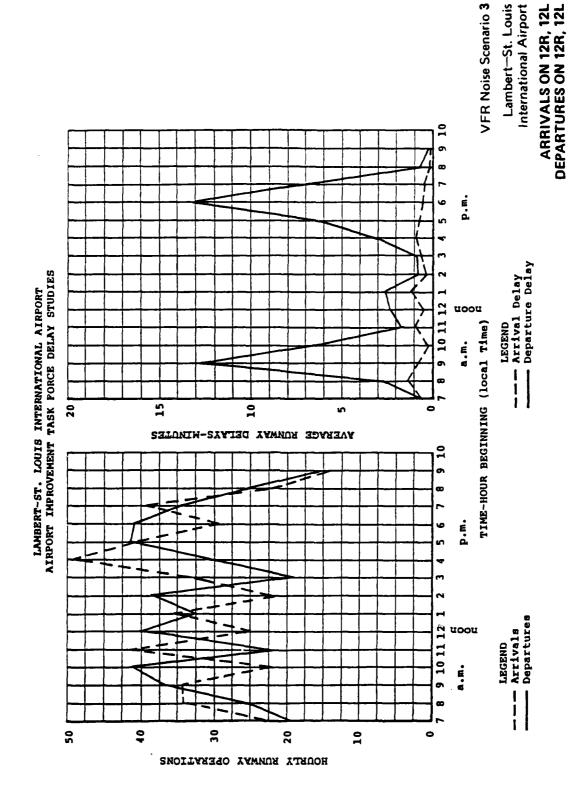
Operation Type	Performance Measure	Units	<u>Average</u> a	Peak
Arrival	Flow rate	a/c per hr.	31.0	40.7
Arrival	Air delay	minute	0.7	0.8
Departure	Flow rate	a/c per hr.	31.0	41.6
Departure	Runway delay	minute	4.9	6.2

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.

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# Experiment No. 1--NOISE 4

#### Scenario:

This experiment is a baseline case using the existing air-field layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways

12R, 12L

12R, 12L

12R, 12L

# Length and Level of Detail of Simulation Run:

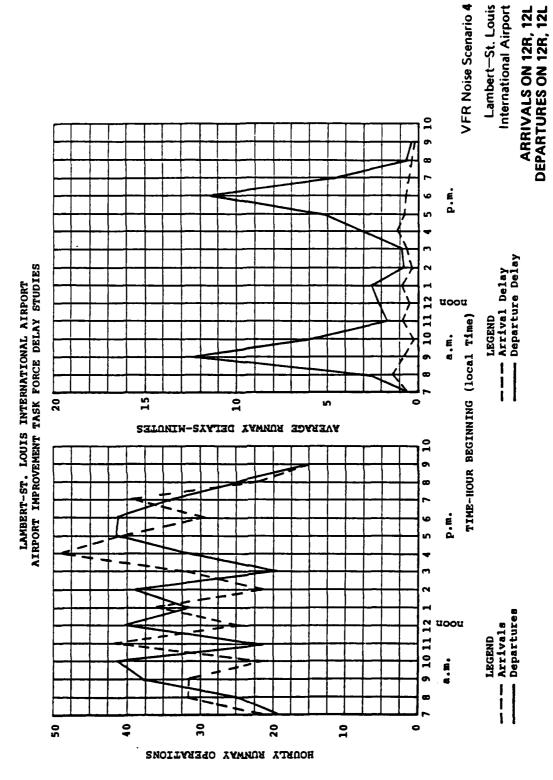
From 0700 to 2200 with 1-hour summaries and a short-form network.

#### Results:

Operation Type	Performance Measure	Units	<u>Average</u> a	Peak
Arrival Arrival	Flow rate Air delay	a/c per hr. minute	31.0 0.7	40.6
Departure Departure	Flow rate Runway delay	a/c per hr. minute	31.0 4.4	42.1 5.3

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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### Experiment No. 1--NOISE 5

#### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways

12R, 12L

12R, 12L

12R, 12L

# Length and Level of Detail of Simulation Run:

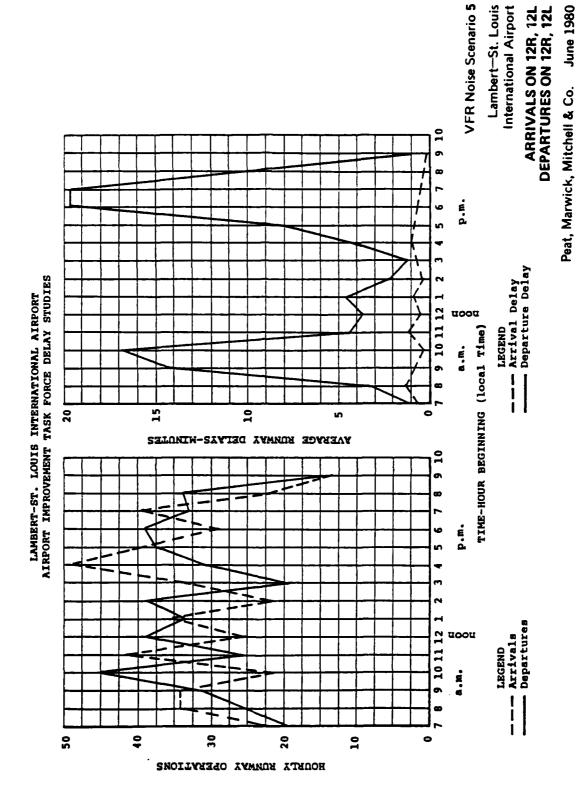
From 0700 to 2200 with 1-hour summaries and a short-form network.

#### Results:

Operation Type	Performance Measure	Units	<u>Average</u> a	Peak
Arrival	Flow rate	a/c per hr.	31.0	40.9
Arrival	Air delay	minute	0.7	0.8
Departure	Flow rate	a/c per hr. minute	31.0	37.5
Departure	Runway delay		8.8	8.3

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



### Experiment No. 4--NOISE 1

### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways	Departure Runways
30R, 30L	30R, 30L

### Length and Level of Detail of Simulation Run:

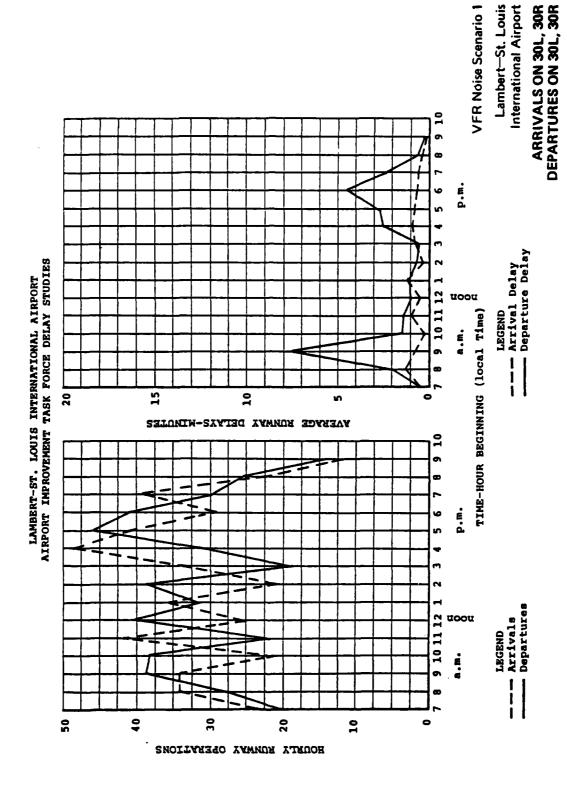
From 0700 to 2200 with 1-hour summaries and a short-form network.

#### Results:

Operation Type	Performance Measure	Units	<u>Average</u> a	Peak
Arrival Arrival	Flow rate Air delay	a/c per hr. minute	30.9 0.8	40.7
Departure Departure	Flow rate Runway delay	<pre>a/c per hr. minute</pre>	31.0 2.2	45.9 2.8

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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### Experiment No. 4--NOISE 2

### Scenario:

This experiment is a baseline case using the existing air-field layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways	Departure Runways
30R, 30L	30R, 30L

# Length and Level of Detail of Simulation Run:

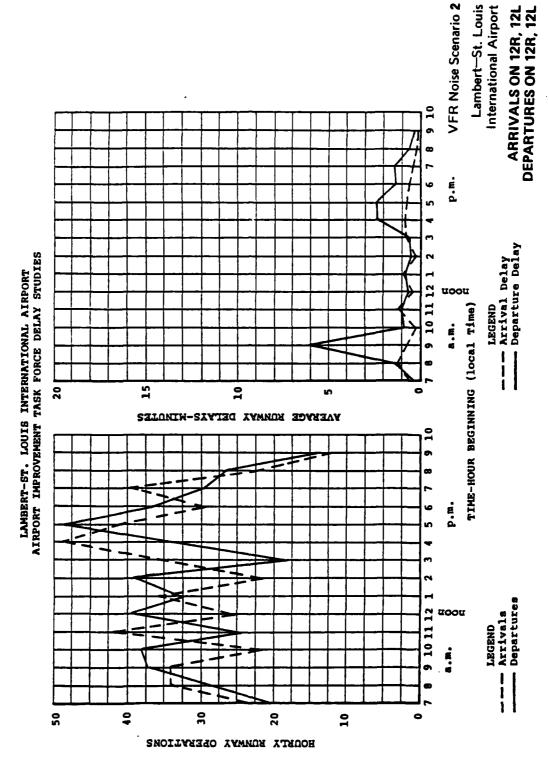
From 0700 to 2200 with 1-hour summaries and a short-form network.

### Results:

Operation Type	Performance Measure	Units	<u>Average</u> a	Peak b
Arrival	Flow rate	a/c per hr.	30.9	40.8
Arrival	Air delay	minute	0.8	
Departure	Flow rate	a/c per hr	31.0	48.7
Departure	Runway delay	minute	1.6	2.3

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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# Experiment No. 4--NOISE 3

#### Scenario:

This experiment is a baseline case using the existing air-field layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways

30R, 30L

Departure Runways

30R, 30L

# Length and Level of Detail of Simulation Run:

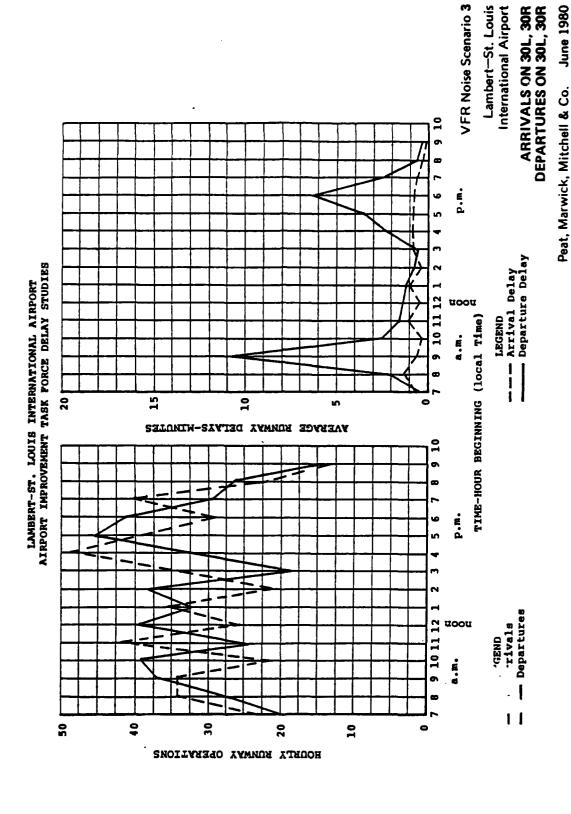
From 0700 to 2200 with 1-hour summaries and a short-form network.

### Results:

Operation Type	Performance Measure	Units	<u>Average</u> a	Peak <sup>b</sup>
Arrival	Flow rate	a/c per hr.	30.9	40.8
Arrival	Air delay	minute	0.7	
Departure	Flow rate	a/c per hr.	31.0	45.4
Departure	Runway delay	minute	2.9	3.5

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



# Experiment No. 4--NOISE 4

### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways	Departure Runways
30R, 30L	30R, 30L

# Length and Level of Detail of Simulation Run:

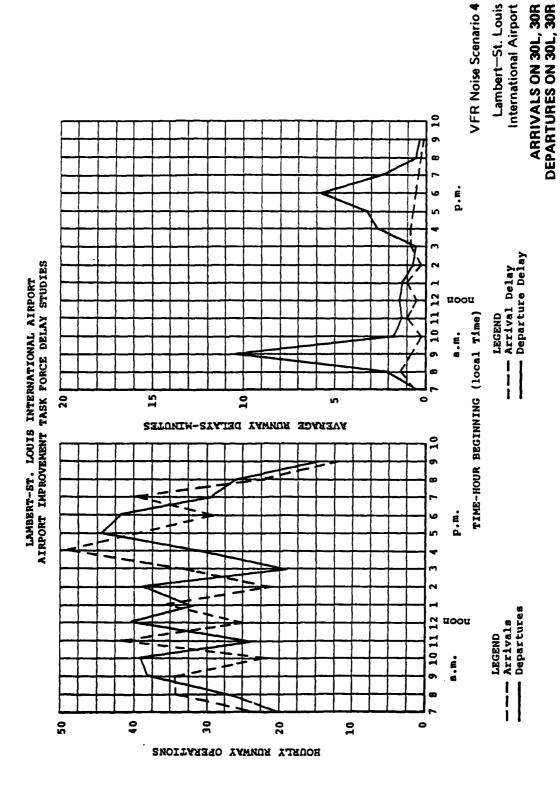
From 0700 to 2200 with 1-hour summaries and a short-form network.

### Results:

Operation Type	Performance Measure	Units	<u>Average</u> a	Peak b
Arrival Arrival	Flow rate Air delay	a/c per hr. minute	30.9 0.7	40.5
Departure Departure	Flow rate Runway delay	a/c per hr. minute	31.0 2.7	44.7 3.1

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.



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### Experiment No. 4--NOISE 5

### Scenario:

This experiment is a baseline case using the existing airfield layout. Demand is at 1979 levels, and 1979 ATC Procedures are in effect in VFR conditions for the following runway configuration:

Arrival Runways	Departure Runways
30R, 30L	30R, 30L

# Length and Level of Detail of Simulation Run:

From 0700 to 2200 with 1-hour summaries and a short-form network.

#### Results:

Operation Type	Performance Measure	Units	<u>Average</u> a	Peak b
Arrival	Flow rate	a/c per hr.	30.9	40.6
Arrival	Air delay	minute	0.7	0.8
Departure	Flow rate	a/c per hr.	31.0	41.4
Departure	Runway delay	minute	5.7	8.1

a. Average over the entire simulation period.

b. For the peak-demand hour, 1700-1800 hours.

